APPENDIX A

Additional Information About Stainless Steel, Brass, and Bronze Alloys

The discussions below were excerpted from the EPA document "Report on the Corrosion of Certain Alloys" [EPA report # EPA-260-R-01-002 (July 2001)], which was made available to the public in July, 2001. The interested reader should consult this report for additional and more detailed discussions on alloys, and references pertaining to alloys.

Stainless Steel Alloys

Identification of Stainless Steel Alloys

Stainless steels produced in the United States can be identified in three general ways: (1) by the Unified Numbering System (UNS) numbers developed by the American Society for Testing and Materials (ASTM) and the Society of Automotive Engineers (SAE) for all commercial metals and alloys; (2) by the American Iron and Steel Institute (AISI) numbering system; and (3) by the names based on compositional abbreviations, proprietary designations, and trademarks. The UNS number comprises six symbols (i.e., a letter followed by five numbers) that are difficult to recognize instantly and memorize for the 180 stainless steels. Therefore, technical journals allow each alloy to be initially identified by the lengthy UNS number and then subsequently the better-known AISI or another designation may be used. The AISI number designates the wrought standard grades of stainless steels by three-digit numbers. Three groups of wrought stainless steels, series 200, 300, and 400, have composition limits standardized by the AISI. Steels in the AISI 400 series contain a minimum of 11.5% chromium and usually not more than 2.5% of any other alloying element. Steels in the AISI 300 series contain a minimum of 16% chromium and 6% nickel; the relative amounts of these elements are balanced to give an austenitic structure. Austenitic structures have face-centered cubic lattices, while ferritic structures have body-centered cubic lattices and martensitic structures have body-centered tetragonal or cubic lattices. Stainless steels containing both austenite and ferrite, usually in roughly equal amounts, are known as duplex. Duplex stainless steels, precipitation-hardening stainless steels, and higher alloys containing less than 50% iron (Fe) do not have AISI designations and are generally known by names based on compositional abbreviations and trademarks, as well as UNS numbers.

The many grades of stainless steel are due to the crystal structure of the iron-rich matrix. The austenite field in iron exists over an increasingly small temperature range as chromium is added, and disappears at about 12% chromium. To make the martensitic grades, it is important to be able to form 100% austenite first. Fortunately carbon extends the austenite range so it is possible to have all austenite prior to quenching in a 12% chromium carbon steel, or if the carbon content is high enough, even in a 17% chromium steel. Adding several percent of nickel to an iron-chromium alloy can allow austenite to exist as metastable or stable forms down to ambient temperature. A body-centered cubic phase, or sometimes a hexagonal close-packed phase, can then form martensitically, and can give very high strengths to the stainless steel. For the ferrite grades, it is necessary to have at least 12% chromium and only very small amounts of elements that stabilize austenite. For these materials, the structure is body-centered cubic from room temperature to the melting point. Some elements, such as molybdenum, niobium, titanium, and aluminum, which encourage the body-centered cubic structure, may also be in these steels.

Compositions of some stainless steels are listed in the following table, Table 1.

Table 1. Typical Composition of some Stainless Steels, wt%

(Sulfur (S) and Phosphorus (P) are held below 0.03 and 0.04% max, respectively, balance is Fe)

AISI #	C	Mn	Si	Cr	Ni	Mo	N	Ti	Nb
201	0.15	6.50	0.75	17.0	4.50		0.20		
202	0.15	8.75	0.75	18.0	5.00		0.20		
205	0.12	15.0	0.50	17.0	1.75		0.35		
304	0.06	1.50	0.75	19.0	10.0				
309	0.16	1.50	0.75	23.0	13.5				
310	0.20	1.50	1.00	25.0	20.5				
316	0.06	1.50	0.75	17.0	12.0	2.50			
321	0.06	1.50	0.75	18.0	10.5			0.50	
330	0.08	2.00	1.00	18.0	35.0				
347	0.06	1.50	0.75	18.0	11.0				1.00
410	0.12	0.75	0.75	12.5					
430	0.10	0.75	0.50	16.0	0.30				
446	0.30	1.00	0.75	25.0			0.20		

Classes of Stainless Steel Alloys

There are four major classes of stainless steel. These are:

1) *Austenitic stainless steels*, these are essentially non-magnetic and cannot be hardened by heat treatment. They are hardenable only by cold-working. As a group, these stainless steels have greater corrosion resistance than the other three groups. At the same time there is a wide range in the corrosion resistance among the austenitic types. Most of these steels contain nickel as the principal austenite former, and some contain substantial amounts, 2-4%, of manganese and less nickel. These steels possess better corrosion resistance than the straight chromium steels. Chromium content is generally between 16-26%, with the nickel content generally between 4-22%. The 300 series represents by far the largest category of stainless steels produced in the United States. For the sake of discussion, the austenitic alloys can be divided into four subclasses.

Class A: AISI types 301, 302, 303, 304, 304L, 304N, 321, 347, and 348 are all contained within class A. Each of the types in this group can be considered an 18-8 stainless steel (i.e., 18% chromium content and 8% nickel content). Within this class, there is no great difference in the general corrosion resistance of the individual types. Those that have a higher alloy content are slightly more corrosion resistant than those with a lower alloy content. Types 321, 347, and 348 are carbide stabilized with titanium and/or niobium. Although their general corrosion resistance may be no higher than types 302 or 304, they are essentially immune to sensitization and the possible attendant intergranular corrosion under specific conditions.

Class B: Only types 305 and 384 are contained within class B. These have relatively high nickel contents (12.0% and 15.0%) nominally and respectively. While they both have greater corrosion resistance than the 18-8 steels, they were principally designed for extra-deep drawing and cold heading operations, as allowed by the higher nickel content

Class C: AISI types 302B, 308, 309, 309S, 310, 310S, and 314 are examples of the class C group. Type 302B is a modified 18-8 and has a silicon addition (2.5%) that increases oxidation resistance at elevated temperatures. Type 314 represents a higher alloy version (25% chromium-20% nickel) of an 18-8 steel. It has a silicon addition that is more corrosion resistant, especially to sulfuric acid, than type 302B and also has a high resistance to scaling at elevated temperatures. Types 308, 309, 309S, 310, and 310S are all higher in chromium and nickel and are commonly called 20-11 (20% chromium-11% nickel, type 308), 24-12 (24% chromium-12% nickel, types 309 and 309S) and 25-20 (25% chromium-20% nickel, types 310 and 310S). They have a very high resistance to corrosion and oxidation at elevated temperatures.

Class D: AISI types 316, 316L, 316F, 316N, 317 and 317L are part of this class. They contain at a minimum 16% chromium and at least 2% molybdenum. The ferrite-forming influence of the molybdenum requires an increase in nickel, as an austenite former, to at least 10%. The presence of molybdenum specifically enhances corrosion resistance to chloride pitting and crevice corrosion and also increases general resistance to specific chemicals (e.g., organic acids, amines, phosphoric acid, dilute sulfuric acid).

2) *Martensitic stainless steels*, these are iron-chromium alloys which are hardened by heat treatment. Heat treatment results in higher strength, with a corresponding proportional diminution of ductility with increasing hardness. Corrosion resistance is less than in the other two groups. In the hardened condition there may be a greater resistance to general corrosion but there is increasingly less resistance to hydrogen-induced cracking. Martensitic steels can be heat-treated to obtain high tensile strengths. The heat treatment results in higher strengths, with a corresponding proportional diminution of ductility with increasing hardness. Corrosion resistance is less than in the other two groups. In the hardened condition, there may be a greater resistance to general corrosion, but there is increasingly less resistance to hydrogen-induced cracking. Chromium content is generally between 11.5-18% with carefully controlled carbon content. Some of the AISI types that make up this group are 403, 410, 414, 416, 420, 420F, 431, 440A, 440B, and 440C.

Types 403, 410, and 416 are known as “turbine quality.” Type 403 is virtually identical to type 410, except that it is made from specially processed and rigorously inspected ingots, as is required for steam turbine blades. Both types contain just enough chromium to maintain “stainlessness” (nominally 12.5%), but there are no significant amounts of other alloying elements. Type 416 is simply 410 with the addition of free-machining additives. Although offering improved machining characteristics, there is a sacrifice in corrosion resistance.

Types 414 and 431 provide better corrosion resistance than type 410, largely because they contain a nominal amount (2.0%) of nickel. These steels have been commonly known as 12-2 (12% chromium-2% nickel) and 16-2 (16% chromium-2% nickel), respectively.

Types 420 and 420F, despite having a higher chromium content than type 410, do not have an appreciably higher corrosion resistance level. Type 420F is almost identical to type 420, except that there is an addition of sulfur to improve machinability. This results in a slight sacrifice of corrosion resistance.

Types 440A, 440B, and 440C are all high-carbon stainless steels and are sometimes called “stainless tool steels.” These types have the highest chromium range of any of the martensitic types, yet their corrosion resistance levels are among the lowest because of their higher carbon content. There is a gradual decrease in corrosion resistance from the A to C subtypes. This is due to the increase in carbon content.

3) *Ferritic stainless steels*, these are nonhardenable steels so designated because they cannot be hardened by heat treatment. They are hardenable only by cold-working. Chromium content is generally between 11.5-27% with low carbon content. Examples of AISI types that make up this group are 405, 409, 429, 430, 430F, 434, 436, 442, and 446. As a group the ferritic stainless steels do not closely approach the austenitic types with respect to corrosion resistance. There are, however, some ferritic types that may nearly equal the corrosion resistance levels of the austenitics in some

environments, but these are exceptions. One of the most interesting aspects of this group of stainless steels is their resistance to stress corrosion.

Type 405, while meeting the minimum requirements for a stainless steel, is actually relatively low in its resistance to corrosion. The carbon level is 0.08% maximum and it has a nominal chromium content of 12.5%. An addition of 0.10 to 0.30% aluminum (a powerful ferritizer) prevents the formation of any appreciable amount of austenite at any temperature. It is thus the ideal grade for welding. Of all the stainless steels, type 409 is generally considered to have the lowest degree of corrosion resistance. It contains very nearly the minimum amount of chromium to qualify as a stainless steel (10.5-11.75%) and is stabilized with titanium.

Types 430, 430F, 434, and 436 represent the old and well-known 17-chrome stainless steel grade, which is the original type 430. Type 430 shows a high resistance against attack by practically all types of atmospheres and also by many types of chemicals, notably oxidizing acids. At times, type 430 replaces the more expensive 18-8 austenitic types. Type 430F is a machinable grade of type 430. The additives contained in it reduce the corrosion resistance of the basic type 430. Type 434 has the same chromium content as type 430, but it has a nominal 1.0% molybdenum content, which adds greatly to its resistance to certain types of corrosion, notably pitting corrosion. Type 436 is essentially type 434, but it contains up to 0.70% niobium plus tantalum for carbide stabilization. Therefore, it is suited for elevated temperature applications as well as for room-temperature corrosion resistance. Types 442 and 446 are frequently called “chrome-irons.” They differ in composition only in chromium content 18.0-20.0% for type 442 and 23.0-27.0% for type 446. Neither is used to any great extent for corrosion resistance at room temperatures. Their principal uses are in heat processing equipment where resistance to scaling is important. Types 442 and 446 are capable of sustained operation at temperatures of 980 °C and 1095 °C respectively, without experiencing destructive scaling. A need for a higher degree of weldability than that provided by type 430 resulted in the development of type 429. Both alloys have the same carbon content; however, 429 has a lower chromium content (14.0-16.0%). This carbon-chromium ratio allows type 429 to retain its ferritic status.

4) The fourth group consists of the *age-hardened or precipitation-hardening steels.* They are hardened and strengthened by solution-quenching followed by heating for substantial times at temperatures in the range of 800-1000 degrees Fahrenheit. Precipitation-hardened stainless steels can have a microstructure consisting of ferrite, martensite, or austenite depending on the heat treatment performed. The precipitation hardening process is thought to involve the formation of very fine intermetallics that impede dislocation motion during deformation, producing higher strength. Prolonged aging cause these intermetallics to coarsen, enabling dislocations to bypass them during deformation, and their strength to begin to decline. In this condition, the material is said to be overaged. AISI types that make up this group include 630, 631, 632, 633, 634, and 660. It is generally considered that the average corrosion resistance of this group approaches that of the 18-8 austenitic grades and that it is usually superior to the corrosion resistance of the martensitic and ferritic types.

Copper is the principal hardening agent in type 630. Its corrosion resistance approaches that of types 302 and 304. In the heat treated condition, type 631 has a duplex structure. Stainless steels that have a duplex structure have a two phase microstructure that exhibits improved strength and high resistance to stress corrosion cracking. With the exception of an addition of molybdenum, type 632 is very much like type 630. There is an improvement in strength and resistance to pitting corrosion due to the addition of molybdenum.

Type 633 is also a duplex-structure grade, but has a slightly higher alloy content than types 631 and 632. Thus, its corrosion resistance is better than types 631 or 632. Type 634 is semiaustenitic (duplex), but it has an alloy content slightly less than type 633. The duplex stainless steels are currently popular for withstanding high chloride environments. These alloys have a two-phase microstructure that exhibits improved strength and high resistance to stress corrosion. Most duplex stainless steels contain high chromium (usually about 25%), low nickel (generally about 8% maximum), and 2-4% molybdenum for enhanced resistance to chloride induced phenomena and to promote general corrosion resistance, specifically pitting corrosion.

The super-austenitic stainless steels include such alloys as 904L and 254MO. These alloys have increased resistance over the austenitic stainless steels due to the addition of 6% molybdenum or other elements.

Brass and Bronze Alloys

Brass, bronze, and other copper alloys have been widely used for centuries in many applications because of their excellent corrosion resistance. Despite the formation of the common green patina in natural environments, copper and its alloys corrode at negligible rates in unpolluted water or air and in deaerated nonoxidizing acids. Copper roofing in rural atmospheres, where there is little if any pollution, has been found to corrode at rates of less than 0.4 mm (15 mils) in 200 years. Some copper alloy artifacts have been found in nearly perfect condition, with only small amounts of corrosion on the surface, after having been buried in the earth for thousands of years.

Although classed as corrosion resistant, neither copper nor its alloys form the truly passive corrosion-resistant film that characterizes most true corrosion-resistant alloys. In aqueous environments at ambient temperatures, cuprous oxide or cupric carbonate forms the protective scale on copper and copper alloys. The film is adherent and follows parabolic growth kinetics. For the corrosion reaction to proceed, copper ions and electrons must migrate through the cuprous oxide or cupric carbonate layer. Consequently, reducing the ionic or electronic conductivity of the film by doping with divalent or trivalent cations should improve corrosion resistance. In practice alloying additions of aluminum, zinc, tin (Sn), iron, and nickel are used to dope the corrosion product films, resulting in a significant reduction in corrosion rate.

Copper alloys can be quite susceptible to stress-corrosion cracking. While high-zinc yellow brasses are the most susceptible to stress-corrosion cracking, small amounts of phosphorus, arsenic (As), antimony (Sb), silicon, aluminum, or nickel as constituents in other copper-base alloys render them also susceptible to stress-corrosion cracking in ammoniacal environments. Other nitrogenous environments, such as nitrite or nitrate solutions, as well as nitric acid vapors, can also cause stress-

corrosion cracking. As for other elements, the corrosion-resistant behavior of copper is best revealed by considering its alloy systems. The basic systems for copper are copper-tin (bronze), copper-zinc (brass), copper-nickel (cupro-nickels), and variations of these, including aluminum-bronzes, phosphor-bronzes, and nickel-silvers.

Copper and its alloys are classified in the United States by composition according to Copper Development Association (CDA) designations which have been incorporated into the Unified Numbering System (UNS) for metals and alloys. Wrought copper materials are assigned five digit numerical designations which range from C10100 through C79999, but only the first three or sometimes four numerals are frequently used for brevity. Designations that start with 8 or 9 are reserved for cast copper alloys.

Most wrought alloys are provided in conditions that have been strengthened by various amounts of cold work or heat treatment. Cold worked alloys are the result of cold rolling or drawing by prescribed amounts of plastic deformations from the annealed condition. Alloys that respond to strengthening by heat treatment are referred to as precipitation or age hardenable. The designations and principal alloying elements of wrought copper alloys are given in Table 3.[56]

Table 3. UNS (CDA) Designations for Brass and Bronze Alloys

Alloy group	UNS (CDA) designation	Principal alloy elements
Brasses	C20500-C28580	Zn
Leaded brasses	C31200-C38590	Zn-Pb
Tin brasses	C40400-C40980	Sn, Zn
Phosphor bronzes	C50100-C52400	Sn-P
Leaded bronzes	C53200-C54800	Sn-P, Pb
Phosphorus-silver	C55180-C55284	Ag-P
Aluminum bronze	C60600-C64400	Al, Fe, Ni, Co, Si
Silicon bronze	C64700-C66100	Si, Sn
Modified brass	C66400-C69950	Zn, Al, Si, Mn

Nickel and copper are mutually soluble or miscible. In commercial alloys known as copper-nickels or cupronickels, where copper is the dominant element, the copper content ranges from about 54% to over 90%. Nickel provides the best general resistance to aqueous corrosion of all the commercially important alloy elements. It promotes resistance to impingement or erosion corrosion and to stress corrosion cracking. The addition of 10-25 wt% nickel to copper-zinc alloys produces alloys called nickel-silvers. Most commonly these have about 18% nickel and 55-65% copper. Such alloy additions promote good resistance to corrosion in both fresh and salt waters. The nickel inhibits dezincification. Nickel-silvers are much more corrosion resistant in saline solutions than brasses of similar copper content.

Elements are added to copper alloys in varying amounts to enhance corrosion resistance. For example, the addition of arsenic, antimony, or phosphorus improves resistance of Admiralty Metals (72% copper, 26% zinc, 1% tin) to dezincification. Also, 2% aluminum is added to 76% copper-22% zinc solutions to produce aluminum brass, and a small amount of arsenic (less than 0.10%) is added to the alloy to inhibit dezincification.

Brass and bronze can be grouped according to how the principal elemental additions affect properties. This grouping depends primarily on whether the additions that dissolve in the liquid copper can form discrete second phases during melting/casting or in-process thermal treatment.
Brass and bronze are considered to be solid solution alloys when copper dissolves other elements to varying degrees to produce a single-phase alloy that is strengthened relative to unalloyed copper. The contribution to strengthening from an element depends on the amount of the element in solution and by its particular physical characteristics, such as atom size and valency. Tin, silicon, and aluminum show the highest strengthening efficiency of the common elemental additives, whereas nickel and zinc are the least efficient. The limiting factor in their alloy range is the extent to which the elements, either singly or in combination, remain dissolved in the copper during processing. Table 4 gives the designations and compositions of some specific brass and bronze wrought alloys. More details on these specific alloys are provided below.

Table 4. UNS (CDA) Designation and Compositions of some Brass and Bronze Wrought Alloys

Alloy group	UNS designation	Elemental composition, wt%[a]
Zinc brass	C260	30 Zn
Leaded brass	C360	35 Zn, 3 Pb
Tin brass	C425	9.5 Zn, 2.0 Sn
Phosphor bronze	C510	5.0 Sn, 0.1 P
Aluminum bronze	C638	2.8 Al, 1.8 Si
Silicon bronze	C654	3.0 Si, 1.5 Sn, 0.1 Cr
Silicon bronze	C655	3.3 Si, 0.9 Mn
Modified Cu-Zn	C688	22.7 Zn, 3.4 Al, 0.4 Co

[a]Remaining percentage is copper.

The presence of finely dispersed second-phase particles in copper alloys contributes to strength, through refined grain size and increased response to hardening from cold working. A dispersion of fine particles can be incorporated into the alloy through thermomechanical processing where the alloy content is above the solid state solubility limit. Precipitation and coarsening of the excess solute by an in-process anneal is used in high copper alloys, such as C194 and C195, to form iron or iron-cobalt dispersions.

Copper-Zinc (Cu-Zn) Brasses

Copper-zinc alloys have been the most widely used of the copper alloys during the 1990's. Brass alloys fall within the designation C205 to C280 and cover the entire solid solution range up to 35 wt% zinc in the Cu-Zn alloy system. Zinc, which is generally less expensive than copper, does not impair conductivity and ductility to any appreciable extent. The alloys have a yellow “brass” color at zinc levels above 20 wt%. By far the best known and most used composition is the 30 wt% zinc alloy, called Cartridge brass, which is best known for its applications as door knobs and bullet cartridges.

The series of brasses, C312 to C385, contain from 0.25-5.0 wt% lead (Pb) for the purpose of improving machinability. C360, having the composition of 61.5 wt% copper, 35.4 wt% zinc, and 3.1 wt% lead, has become the industry standard for machinability performance.

Tin Brasses

The tin brass series of alloys consists of various copper-zinc (2.5-35 wt%) alloys to which up to about 4 wt% tin has been added. These are the C40000 series of alloys. Tin provides better general corrosion resistance and strength without greatly reducing electrical conductivity. Several tin brasses have lead additions to enhance machinability. Naval Brass C485 contains 60.5 wt% copper, 37 wt% zinc, 0.7 wt% tin, and 1.8 wt% lead. Resistance to dezincification is increased with the addition of tin. In brasses that contain a high zinc content, it is common to use other alloying additives to enhance corrosion resistance. C443 contains 0.02-0.10 wt% arsenic, C444 contains 0.02-0.10 wt% antimony, and C445 contains 0.02-0.10 wt% phosphorus, which is added to control dezincification. When any of these elements are used, the alloy is referred as being "inhibited."

Tin Bronzes

Tin bronzes may be the most familiar of copper alloys with roots going back into ancient times. They are essentially solid solutions of tin in copper. Phosphorus at 0.03-0.35 wt% is commonly used as a deoxidizer, and the residual phosphorus content gives rise to the term "phosphor bronze." The addition of tin to copper promotes good resistance to fresh and sea water. Under some conditions, when more than 5% tin is present, the corrosion resistance in marine applications is enhanced. Strength, corrosion resistance, and stress relaxation resistance increases with tin content. Where the water velocity is high, the tin content in copper alloys for marine applications should exceed 5%. Alloys containing between 8-10% tin have high resistance to impingement or erosion attack. Tin bronzes tend to have intermediate pitting resistance. One of the most highly used specialty tin bronzes is C544, containing 88 wt% copper-4 wt% tin-4 wt% zinc-4 wt% lead. Zinc provides increased strength to this tin bronze, whereas the lead addition provides good machinability.

Aluminum Bronzes

Aluminum bronze alloys comprise a series of alloys (C606 to C644) based on the copper-aluminum (2-15 wt%) binary system, to which iron, nickel, and/or manganese are added to increase strength. Corrosion resistance results from the formation of an adherent aluminum oxide layer that protects the surface from further oxidation. Mechanical damage to the surface is readily healed by the redevelopment of this oxide. The aluminum bronzes are resistant to sulfuric or hydrochloric acids, but not nitric acid. These alloys must be properly heat treated to be resistant to dealloying and general corrosion.

Two single-phase, binary alloys are used commercially: C606, containing 5 wt% aluminum and C610, containing 8 wt% aluminum. Most of the available aluminum bronzes contain additional alloy elements. C608 contains 5 wt% aluminum to which 0.02-0.35 wt% arsenic has been added to improve corrosion resistance. Alloy C614, in addition to having 7 wt% aluminum and 2.5 wt% iron, also has a 0.3 wt% tin addition for improved resistance to stress corrosion.

Most of the aluminum bronzes contain substantial iron, nickel, or manganese additions. These alloying elements increase strength by forming second phases during heat treatment. Iron, the most commonly added element, separates as an iron-rich particle that controls grain size while it enhances strength. Nickel also reacts with aluminum to form NiAl precipitated during heat treatment with the same result as the iron addition.

Silicon Bronzes

Silicon bronzes have long been available for use in electrical connectors, heat exchange tubes, and marine and pole line hardware because of their high solution hardened strength and resistance to general and stress corrosion. Their compositions are limited to below 4.0 wt% silicon because above this level, an extremely brittle phase is developed that prevents cold processing. The three most popular alloys in this series are C651, C654, and C655.

Modified Copper-Zinc Alloys

The series of brass alloys C664 to C698 have been modified by additions of manganese (manganese brasses and manganese bronzes), aluminum, silicon, nickel, and cobalt. Each of the modifying additions provides some property improvement to the already workable, formable, and inexpensive Cu-Zn brass base alloy. Aluminum and silicon additions improve strength and corrosion resistance. Nickel and cobalt form aluminide precipitates for grain size control and dispersion strengthening by the presence of finely dispersed second-phase particles in the copper alloy.

Specific Properties of Cast Brass and Bronze Alloys

Cast copper alloys can be classified into two main groups: single-phase alloys, characterized by moderate strength, high ductility (except for leaded varieties), moderate hardness and good impact strength; and polyphase alloys, having high strength, moderate ductility, and moderate impact strength. The tolerance for impurities is normally greater in cast copper alloys than in wrought copper alloy because the cast alloys are not mechanically formed. However, in those cast alloys likely to be repaired or joined by welding, some impurities can be very detrimental. On the basis of consumption, red brass alloys, C83600 (85 wt% copper, 5 wt% tin, 5 wt% lead, and 5 wt% zinc), C84400 (81 wt% copper, 3 wt% tin, 7 wt% lead, and 9 wt% zinc), and C93200 (83 wt% copper, 7 wt% tin, 7 wt% lead, and 3 wt% zinc) are the most important of the cast copper alloys.

The mechanical properties of cast copper alloys (e.g., brass, bronze) are a function of alloying elements and their concentrations. The nominal chemical composition and identification of some copper casting alloys are listed in Table 5.

Table 5. Nominal Composition by wt% of Some Casting Brass and Bronze Alloys

Common name	UNS (CDA) designation	Cu	Sn	Pb	Zn	Fe	Al	Others
high strength yellow brass	C86300	63.0			25.0	3.0	6.0	3.0 Mn
gun metal	C 90500	88.0	10.0		2.0			
tin bronze 84:16	C 91100	84.0	16.0					
high leaded tin bronze	C 93700	80.0	10.0	10.0				
steam bronze	C 92200	88.0	6.0	1.5	4.5			
phosphorus bronze	C 94400	81.0	8.0	11.0				0.35 P
high leaded tin bronze	C 93800	78.0	7.0	15.0				
journal bronze	C 94100	70.0	5.5	18.0	3.0			
aluminum bronze 9D	C 95500	81.0				4.0	11.0	4.0 Ni
Al-Silicon bronze	C 95600	91.0					7.0	2.0 Si
Mn-Al bronze	C 95700	75.0				3.0	8.0	12.0 Mn, 2.0 Ni
Ni-Al bronze	C 95800	81.0				4.0	9.0	1.0 MN, 5.0 Ni
die-casting yellow brass	C 85800	58.0	1.0	1.0	40.0			
die-cast silicon brass	C 87800	82.0			14.0			4.0 Si
commercial no. 1 yellow brass	C 85400	67.0	1.0	3.0	29.0			
yellow brass	C 85700	63.0	1.0	1.0	34.7		0.3	
high strength yellow brass	C 86200	64.0			26.0	3.0	4.0	3.0 Mn
leaded high strength yellow brass	C 86400	59.0		1.0	40.0	2.0	1.5	1.5 Mn
silicon bronze	C 87200	89.0	1.0	0.5	5.0	2.5	1.5	1.5 Mn, 4.0 Si
silicon brass	C 87400	83.0			14.0			3.0 Si
silicon brass	C 87500	82.0			14.0			4.0 Si
tin bronze	C 90300	88.0	8.0		4.0			
leaded tin bronze	C 92300	87.0	8.0	1.0	4.0			
high leaded tin bronze	C 93200	83.0	7.0	7.0	3.0			
nickel-tin bronze	C 94700	88.0	5.0		2.0			5.0 Ni
leaded nickel-tin bronze	C 94800	87.0	5.0	1.0	2.5			5.0 Ni

APPENDIX B

Selected Questions and Answers

Part 1: Relevant Questions and Answers Extracted from the *Revised 1998 EPCRA Section 313 Questions and Answers (December 1998)*

Part 2: Questions and Answers Received Since Promulgation of the Lead Rule

Appendix B Part 1:
Relevant Questions and Answers Extracted from the *Revised 1998 EPCRA Section 313 Questions and Answers (December 1998)*

Article Exemption – Lead

376 – A covered manufacturing *facility* produces neon signs by bending leaded glass tubing. The *facility* uses enough tubing annually to *process* in excess of 25,000 pounds of lead, an EPCRA Section 313 *toxic chemical*. When signs are formed from glass tubing, the diameter of the tubes remains unchanged and lead is not released during the heating or bending *process*, qualifying the tubes for the *article* exemption. If a discrete number of glass tubes are broken and discarded during the year, under what circumstances would *disposal* of the broken tubes constitute a release that negates the *article* exemption, and how would the *facility* calculate the amount of lead used in their operation?

Disposal of the glass does not necessarily constitute a release which automatically negates the *article* exemption. For the tubing to meet the definition of an *article* when discarded, the diameter of the tubing must remain intact and unchanged. As a result, shards of glass no longer qualify as *article*s. If more than 0.5 pounds of lead is released and not recycled, then the *article* exemption would not apply to this glass tubing.

Article Exemption – Lead Bricks

370 – A ship building *facility* incorporates lead bricks as ballast into the ships it distributes in commerce. The lead bricks remain permanently with the ship. They could be considered *articles* and therefore be exempt from reporting. However, the *facility* infrequently cuts some of the bricks, generating lead dust, which it collects and sends to an off-site lead reprocessor. How should the *facility* report? What should be counted towards the threshold if the lead bricks are not considered *articles*?

If all of the lead is recycled or reused then the lead dust does not have to be counted as a release. Therefore, the cut bricks retain their *article* status. If while cutting the bricks, there are *releases* which are not recycled and that exceed 0.5 pounds for a year, then the cut bricks would not be considered *article*s. In this case, count only the lead in bricks actually *processed* toward the threshold determination. Any amounts of *toxic chemicals* sent off-site for recycling would be reported appropriately on the Form R.

De Minimis Exemption – Metal Compounds

321 – Does the de minimis exemption apply to the parent metal component of a compound in a *mixture* for Section 313 reporting?

No. For threshold determinations, the weight percent of the whole compound in the *mixture* is used. In general, the de minimis value for compounds is one percent, unless the particular compound is itself an OSHA carcinogen and then the de minimis level is 0.1 percent.

Incineration

578 – A *covered facility* has a liquid wastestream containing a *toxic chemical* which is incinerated. The incineration destroys 99.9 percent of the chemical. However, 0.1 percent is *released* to air. Does the *facility* need to report this wastestream in the waste treatment Section of the Form R?

If the threshold is met, the *facility* must report this liquid wastestream as *treated for destruction* in Part II, Section 7 of the Form R. The listed *toxic chemical* remaining after incineration in the gaseous wastestream must be reported as stack or point source air emissions in Part II, Section 5.2 of the Form R. The amount of the listed *toxic chemical* destroyed is also reported in Part II, Section 8.6 of the Form R, and the stack or point source air emissions are also reported in Part II, Section 8.1 of the Form R.

Intake Water Exemption

258. A *covered facility* dewaters its underground mine and sells the water which contains reportable *toxic chemicals* to other *facilities*. Are *toxic chemicals* in the water exempt from threshold determinations?

No. If a *facility* sells water that it extracts from its underground mine, it is *processing* the water and any listed *toxic chemicals* contained in the water must be considered toward threshold determinations and *release* and other *waste management* calculations.

Lead and Lead Compounds

419 – For Section 313 reporting requirements and threshold determinations, if a *covered facility* uses lead, lead chromate, and other chromium compounds, can they be considered separately or must they be combined into categories? When reporting *releases* and other *waste management* activities, must quantities of categories be determined as well?

Threshold determinations for metal containing compounds are made separately from parent-metal threshold determinations because they are listed separately under Section 313. In the scenario presented in the question, the *facility* would apply the quantity of the lead metal *manufactured, processed*, or *otherwise used* to the appropriate threshold for lead. The *facility* would apply the quantities of the lead chromate *manufactured, processed*, or *otherwise used* to the appropriate threshold for lead compounds and would apply the quantities of the lead chromate and other chromium compounds *manufactured, processed,* or *otherwise used* to the appropriate threshold for chromium compounds. However, a *facility* may, once a threshold has been met individually, combine the parent

metal and its metal compounds for reporting. In completing the Form R, only the weight of the parent metal (not the entire compound weight) is to be considered.

421 – A *covered facility processes* both elemental lead and lead compounds. The *facility* exceeds the 25,000 pounds per year *processing* threshold for lead compounds, but not for elemental lead, and must submit a report for lead compounds only. When calculating *releases* and other *waste management* activities from the lead compounds, the owner/operator is only required to account for the weight of the parent metal released (40 CFR Section 372.25(h)). Should the *facility* account for both *releases* of lead from activities involving lead compounds and *releases* of lead from activities involving elemental lead?

No. In the case when an activity threshold is exceeded only for lead compounds, the report is only required to be based on the *releases* and other *waste management* estimates of lead, the parent metal, from lead compounds only. *Releases* and other *waste management* estimates of lead resulting from activities involving elemental lead need not be included in the *release* and other *waste management* calculations. Conversely, if the *facility* were to exceed an activity threshold for only elemental lead, the report would only have to be based on *releases* and other *waste management* estimates from activities involving elemental lead only.

422 – A *covered facility* has determined that it needs to report under EPCRA Section 313 for both elemental lead and lead compounds. Can this *facility* file one Form R that takes into account both the *releases* and other *waste management* activities of lead and lead compounds, or is it required to report separately?

If a *covered facility* exceeds thresholds for both the parent metal and compounds of that same metal, it is allowed to file one joint Form R (e.g., one report for both lead compounds and elemental lead). EPA allows this because the *release* and other *waste management* information reported in connection with metal compounds will be the total pounds of the parent metal *released* and otherwise managed as a waste.

<u>Lead Deposits</u>

160 – A remanufacturer of auto engines cleans the engine parts and thereby produces a lead-containing waste (from gasoline lead deposits) which it sends off-site for *disposa*l. Does the *facility manufacture, process,* or *otherwise use* lead compounds?

None of the EPCRA Section 313 activities apply. Neither lead nor lead compounds are *manufacture*d. Lead is not incorporated into products for distribution in commerce nor is it a manufacturing aid or a processing aid as those terms are defined. Lead in the waste would not be included for a threshold determination. The *facility* does not *manufacture*, *process*, or *otherwise use* lead compounds.

Metal Alloy

107 – How does a *facility* determine the threshold for reporting of a listed *toxic chemical* (such as chromium) in a solid piece of steel which it *processe*s?

Since steel is a *mixture* (and not a compound), the *processing* threshold determination is made based on the total amount of each *toxic chemical* present in the steel. If the *toxic chemical* is present in a known concentration, the amount present can be calculated by multiplying the weight of the steel by the weight percent of the listed *toxic chemica*l. The threshold for *processing* is 25,000 pounds.

109 – Regarding metals in *mixture*s, such as chromium in an alloy (stainless steel), how are thresholds and *releases* and other *waste management* activities accounted for in a foundry type operation where all of the metals are melted down? Could the de minimis and *article* exemptions be applied?

For threshold purposes, if the listed *toxic chemicals* in the metals are *processe*d, *otherwise use*d, *manufactured* as an impurity (that remains with the product), or *imported* below the de minimis levels, then the de minimis exemption may be taken for that metal in the alloy. However, the *article* exemption cannot be taken for this type of foundry operation since in founding, a metal is melted down and poured into a mold. Consequently, the resulting metal is not recognizable as its original form.

464 – How is galvanized sheet metal considered for EPCRA Section 313 reporting? Are metals in alloys subject to Section 313 reporting?

Galvanized sheet metal is an alloy of several different metals. An alloy is considered a *mixture* for Form R reporting because the individual metals in the alloy retain their chemical identities. Like all other listed *toxic chemicals* in *mixture*s, alloys are subject to Form R reporting. When determining whether a *facility* meets an activity threshold, the owner/operator should only consider the weight percent of the listed chemical in the alloy.

Metal Compounds

108 – How are threshold determinations made for metal-containing compounds?

Threshold quantities for metal compounds are based on the total weight of the metal compound, not just the metal portion of the metal compound. The threshold quantities are determined by adding up the total weight of all metal compounds containing the same parent metal. However, *release* and other *waste management* calculations are based solely on the weight of the parent metal portion of the metal compounds. Note that there are a few metal compounds that are separately listed and are not counted in the metal compounds categories. For example, maneb (CAS number 12427-38-2) is a manganese compound that is a separately listed chemical and is not reportable under the manganese compounds category.

112 – A *covered facility manufactures* specialty glass products. The starting materials are primarily metal silicates which are ground into a powder, mixed, and heated. The resulting *mixtur*e, the specialty glass, has all the metal silicates melted together in a non-crystalline structure. Since the metal silicates do not exist by themselves in the *mixtur*e, how should a threshold determination be made?

The metal silicates are *processed* since they become incorporated into a product (the specialty glass) that is distributed in commerce. If the metal silicates still exist as the original metal silicates but just mixed together then each metal silicate that belongs to a particular metal compound category is included in the *processing* threshold calculations for that category. If the metal silicates have been reacted to produce another compound (i.e., if the specialty glass is not just a *mixture* of individual metal silicates but is another new metal compound) then the metal silicates have still been *processe*d, but a new metal compound has also been *manufactured* and its weight (i.e., the whole weight of the glass) must be included in the *manufacturing* threshold calculations.

137 – In an electroplating operation, a *facility* uses an elemental copper anode and an electrolyte solution containing a copper compound. During the electrolytic process, elemental copper is deposited at the cathode (the item being plated). As elemental copper is plated out at the cathode, copper goes into solution at the anode forming a copper compound. For purposes of EPCRA Section 313, how would the *facility* make threshold determinations for copper and copper compounds?

The electroplating of copper is a two step process in which the elemental copper from the anode is converted into a copper compound in solution and the copper compound in solution is converted to elemental copper. A constant concentration of copper compounds is thus maintained in the electrolytic solution surrounding the electrodes. In such an electrolytic cell, four separate thresholds are applicable for purposes of EPCRA Section 313:

a. The amount of copper anode consumed counts towards a *processing* threshold for elemental copper (since its purpose is to provide copper to the cathode, via the bath).

b. The amount of copper compound generated in the electrolytic solution (as a result of oxidation of elemental copper at the anode) would count towards a *manufacturing* threshold for copper compounds.

c. The amount of copper compound converted to elemental copper in the electrolytic solution counts toward a *processing* threshold for copper compounds (since it is available for reduction at the cathode).

d. Finally, the amount of copper deposited at the cathode would count towards a *manufacturing* threshold for elemental copper (since elemental copper is being produced from a copper compound).

For example, a *facility* uses up 15,000 pounds of copper anode per year (the anode is composed of elemental copper). The elemental copper is *processed* by *manufacturing* 37,000 pounds of copper sulfate (copper sulfate ($CuSO_4$) is 40 percent copper by weight and, in this example, is the form in

which copper exists in the electroplating bath). The copper sulfate is then *processed* by *manufacturing* 15,000 pounds of elemental copper.

The following thresholds apply:

	Manufacture	*Process*
Elemental Copper	15,000 lbs	15,000 lbs
Copper Compounds	37,000 lbs	37,000 lbs ($CuSO_4$)

The *facility* would file a Form R for "Copper Compounds" because it exceeds the *manufacturing* and *processing* thresholds for a copper compound.

138 – A covered electroplating *facility* uses copper cyanide as its source of copper in plating baths in their electroplating operation. Are they *manufacturing*, *processing*, or *otherwise using* this compound? How do they determine whether they meet the activity threshold and how are *releases* and other *waste management* activities reported for this chemical?

In this process the copper cyanide is both *manufactured* and *processed*. The copper cyanide is created in the plating solution, and the amount created should be counted towards the 25,000 pound *manufacturing* threshold. The copper cyanide is also being *processed* since the copper from the copper cyanide is plated onto an object that is to be distributed in commerce. Thus, the copper cyanide used in this process should be counted towards the *processing* threshold for both copper and cyanide compounds. The copper cyanide is both a copper compound and a cyanide compound and is reportable under both the copper compounds category and the cyanide compounds category. The total weight of the copper cyanide is to be counted towards the thresholds for both categories. However, for reporting *releases* and other *waste management* activities, the total weight of the copper cyanide is to be reported under the cyanide compounds category, but only the weight of the copper is to be reported under the copper compounds category.

154 – Do *covered facilities* need to consider the inadvertent conversion of one metal compound to another as *manufacturing*? For example, a pulp and paper mill inadvertently converts metal carbonates and oxides in wood to metal sulfides during pulping. Is this a covered *manufacturing* activity?

Yes. *Manufacturing* is not limited to intentional *manufacturing*; it also includes coincidental *manufacture* or, inadvertent *manufacture*. In general, anytime one metal compound has been converted to another metal compound, the *facility* must count the new metal compound towards the *manufacturing* threshold. The fact that the parent metal is the same in both compounds does not negate the fact that a new metal compound has been *manufactured*.

162 – A glass manufacturer uses a brick in its refractory kiln that contains chromium (III) compounds. During the manufacturing process, the chromium reacts to generate chromium (VI) compounds. The chromium compounds, while being used in the kiln, become part of the glass being manufactured. All the brick in the kiln is replaced every four to five years. What activity thresholds apply to chromium in this situation?

The brick, and thus the chromium (III) compounds in the brick, are being *otherwise used* based on the quantity of the bricks installed within a reporting year. The chromium compounds in the bricks are also considered *processed*, because the chromium compounds in the brick are incorporated as an impurity into the final product (the glass) which is distributed in commerce. However, for this *processing* step, the de minimis exemption may be taken. The chromium (VI) compounds generated from the chromium (III) compounds are considered *manufacture*d. Thus, threshold calculations should be made for all three EPCRA Section 313 activity thresholds. The thresholds would be calculated based on the total weight of the chromium compounds being *manufactured, processed,* or *otherwise use*d. However, only the weight of the chromium in the chromium compounds are used in *release* and other *waste management* calculations. Any *releases* that go up the stack or are sent off-site for *waste management* must be included. When the brick is replaced and *disposed* of, the amount of chromium that remains in the brick would also need to be included in *release* and other *waste management* calculations.

206 – The preamble to the May 1, 1997, Final rule (62 FR 23834) says that extraction of ore containing *toxic chemicals* for subsequent distribution in commerce constitutes the *processing* of those listed chemicals. Does this mean that metal compounds in extracted ore are *processe*d, even if they are later converted to different compounds prior to their actual distribution in commerce (i.e., the extracted compound is considered a *process* intermediate)?

Yes. Amounts of materials that undergo a processing step (extraction) as part of the *facility*'s preparation of a material for distribution in commerce are considered *processed* and must be considered toward the facility's *processing* threshold because a part of the original metal compound is incorporated into the product which is ultimately distributed in commerce.

See - De Minimis Exemption – Metal Compounds

391 – How are *toxic chemical* categories handled under Section 313 threshold determinations and *release* and other *waste management* calculations?

All *toxic chemicals* in the category that are *manufactured, processed,* or *otherwise used* at a *covered facility* must be totaled and compared to the appropriate thresholds. A threshold determination for *toxic chemical* categories is based on the total weight of the compound. Except for metal compound categories and nitrate compounds, the total weight of the compound *released* or otherwise managed as waste must be reported. *Releases* and other *waste management* quantities of

metal compounds are reported as the parent metal portion of the compounds. If the metal and corresponding metal compounds exceed thresholds, a joint report for metal compounds, including the parent metal, can cover both reporting requirements. Similarly, *releases* and other *waste management* quantities of nitrate compounds are reported as the nitrate portion of the compound.

395 – Do we count the nonmetal portion of metal compounds?
The nonmetal portion of metal compounds is included in threshold determinations but not in *release* and other *waste management* calculations.

398 – A *covered facility* has a coal-fired *boile*r. The combustion of the coal generates aerosol forms of hydrochloric acid as a byproduct. Should the aerosol forms of the HCl emissions be reported under EPCRA Section 313?
Yes. In the combustion of coal, the *facility* will be coincidentally *manufacturing* aerosol forms of hydrochloric acid, as well as hydrofluoric acid and sulfuric acid. The combustion of coal will also result in the coincidental *manufacture* of new metal compounds. The *facility* must submit a Form R if it *manufactures* more than 25,000 pounds of any of these listed *toxic chemical*s.

412 – For Section 313 reporting, a catalyst contains 61 percent total nickel, which includes 26 percent nickel metal and 35 percent nickel contained in compounds. Should the threshold determination be based on the 61 percent total nickel?
No. The 61 percent total nickel cannot be used in the threshold determinations. Nickel compounds are a listed *toxic chemical* category; therefore, the full weight of nickel compounds (not just the 35 percent nickel contained in the compounds) must be used in the threshold determination for nickel compounds. A separate threshold determination is required for the nickel metal since nickel is a separately listed *toxic chemical* under Section 313.

414 – A *covered facility* uses chromium compounds in its electroplating operation, and as a result, a hexavalent chromate compound is generated. Are the hexavalent chromate compounds reportable under Section 313?
The hexavalent chromate compounds are members of a reportable *toxic chemical* category, chromium compounds, and have been *manufactured* by the oxidation/reduction reaction that occurred in the electroplating operation. As a result, the total amount of the hexavalent chromate compounds produced must be included in the *manufacturing* threshold for chromium compounds.

415 – Is the conversion from one metal compound to another metal compound within the same metal compound category considered *manufacturing* for purposes of threshold determinations and *releas*e, and other *waste management* calculations?

Yes. The conversion of one metal compound to another metal compound within the same metal compound category is considered the *manufacture* of a metal compound, which must be considered toward threshold determinations. This is identical to how threshold calculations are derived for listed *toxic chemicals* in non-metal compound categories. The unique aspect for metal compounds, as compared to non-metal compounds within a listed compound category, is how amounts *released* and otherwise managed as waste are reported. As stated in the final rule (62 FR 23850; May 1, 1997), "if a metal is converted to a metal compound or if a metal compound is converted to another metal compound,..., a metal compound has been *manufactured* as defined under EPCRA Section 313." However, provided that thresholds are exceeded, *covered facilities* are instructed to report only the amount of the parent metal contained in the metal compound for amounts *released* or otherwise managed as waste. If thresholds for both the elemental metal and its metal compounds have been exceeded, *covered facilities* have the option to submit one Form R that includes on their report the amounts of the elemental metal from the parent metal along with amounts of the metal portion from the metal compounds.

416 – An electroplating *facility* uses metal cyanide compounds in their electroplating operations. Are they *processing* or *otherwise using* those cyanide compounds? How do they determine whether they meet the threshold, and which threshold applies?

The parent metal is plated onto a substance electrochemically. The metal compounds are *processed*, and the cyanide compounds are *processed* because the metal cyanide is the source of the metal that is plated and subsequently distributed in commerce. Metal cyanides are reportable as both cyanide compounds and metal cyanides. The total compound weight is applied for threshold determinations for both categories.

417 – We manufacture and use copper wire. We also use copper compounds in various parts of our processes. The Section 313 list contains both copper and copper compounds. Should we combine these categories for our determination of thresholds and reporting? Do we report the *release* and other *waste management* of copper compounds as copper metal?

Copper and copper compounds are separate entries on the Section 313 list, and therefore threshold determinations should be made separately. Copper compounds are a listed category and will include the aggregate of all copper compounds (other than the free metal). For copper compounds, report *releases* and other *waste management* activities as copper (e.g., as the copper ion in wastewater), not as the total mass of copper compounds. If a *facility* exceeds thresholds for both the parent metal and compounds of the same metal, EPA allows the *facility* to file a combined report (e.g., one report for copper compounds and copper metal).

419 – For Section 313 reporting requirements and threshold determinations, if a *covered facility* uses lead, lead chromate, and other chromium compounds, can they be considered

separately or must they be combined into categories? When reporting *releases* and other *waste management* activities, must quantities of categories be determined as well?
Threshold determinations for metal containing compounds are made separately from parent-metal threshold determinations because they are listed separately under Section 313. In the scenario presented in the question, the *facility* would apply the quantity of the lead metal *manufactured, processed*, or *otherwise used* to the appropriate threshold for lead. The *facility* would apply the quantities of the lead chromate *manufactured, processed*, or *otherwise used* to the appropriate threshold for lead compounds and would
apply the quantities of the lead chromate and other chromium compounds *manufactured, processed*, or *otherwise used* to the appropriate threshold for chromium compounds. However, a *facility* may, once a threshold has been met individually, combine the parent metal and its metal compounds for reporting. In completing the Form R, only the weight of the parent metal (not the entire compound weight) is to be considered.

420 – Are chromium compounds (e.g., chromic acid CAS number 11115-74-5 or chromic acetate CAS number 1066-30-4) reportable under Section 313?
All chromium compounds are reportable. They must be aggregated together for purposes of threshold and maximum amount on-site calculations. However, *release* and other *waste management* amounts should be for the chromium metal portion only.

See Lead and Lead Compounds

423 – An oxidation/reduction reaction that occurs as part of a waste treatment operation results in the formation of 2,500 pounds of lead chromate. How must a threshold determination be made for this compound?
Lead chromate meets the criteria for both a lead compound and a chromium compound. In such cases, the total amount of the compound *manufactured, processed*, or *otherwise used* must be applied to the threshold determination for both metal compound categories. The weight of the entire compound, not the weight of the parent metal, is applied for the threshold determination of each metal compound category.

584 – In Part II, Section 7A of the Form R, should *covered facilities* report the influent concentration to a treatment system for metal compounds in a wastestream for the parent metal only? How do I consider treatment efficiencies for metal compounds?
For metal compounds, the calculation of the reportable concentration and waste treatment efficiency must be based on the weight of the parent metal, not on the weight of the metal compounds. Metals are not destroyed, only physically removed or chemically converted from one form to another. The waste treatment efficiency reported must represent only the physical removal from the wastestream (except

for incineration) not the percent conversion from one form to another. If a listed waste treatment method converts but does not remove a metal (e.g., chrome reduction), the method must be reported with a waste treatment efficiency of zero.

Metals

See Metal Compounds

382 – Are there recommended methods for determining if the 0.5 lb *release* limit is exceeded from a metal stamping operation?
EPA recommends that *facilities* use one or more of the following for performing *release* and other *waste management* calculations of EPCRA Section 313 chemicals: monitoring data, mass balance, emission factors, and engineering calculations. If all wastes generated from stamping operations (including fume, dust, sludge and scrap pieces) are recycled or reused and the *facility's* total *releases* will be equal to or less than 0.5 lb limit for each *toxic chemical* per year, the *article* exemption may apply. If *releases* (including *disposa*l) of a *toxic chemical* are more than 0.5 lb, the *article* exemption is negated for that chemical and all quantities of that chemical in the metal sheets should be included in threshold determinations and *release* and other *waste management* calculations.

494 – Why does EPA not allow *covered facilities* to use the efficiency of a combustion unit (e.g., incinerator, *industrial furnace* or *boile*r) to calculate *releases* of metals from the unit?
Metals cannot be destroyed by combustion. Therefore, the efficiency of a combustion unit has no relation to the *releases* of metals from the unit.

568 – A *covered facility* sends a *toxic chemical* in a paint thinner waste to a firm for fuel blending purposes. Should the amount of toluene and xylene in the waste be reported on the Form R, Part II, Section 6 as a transfer off-site?
A *toxic chemical* in a wastestream sent off-site for waste fuel blending is considered combusted for energy recovery if the listed *toxic chemical* has a significant heat value and is combusted in an energy recovery device. EPA believes that waste blended into fuel will be combusted in an integrated energy recovery device. Where both elements are met, the quantity of the *toxic chemical* must be reported as an off-site transfer for purposes of energy recovery on the Form R. However, other reportable *toxic chemicals* in the waste (e.g., metal pigments) that are incombustible or that do not add significant heat value to energy recovery upon combustion must be reported as off-site transfers for purposes of waste treatment or *disposa*l, as appropriate. Please note that metals cannot be treated or combusted for energy recovery purposes and, therefore, should be reported as *disposed* in
Section 8 of the Form R, unless the *facility* has knowledge the metals are being recycled.

588 – If a *covered facility* sends metal scraps containing chromium off-site to be remelted and subsequently reused, does it report the amount of *toxic chemical* in the metal as recycled off-site?

Assuming no contaminants are removed during the melting process, the chromium in the metal scraps is not actually being recovered but merely melted and reused. Therefore, the amount of the *toxic chemical* in the metal scraps would not be reportable in Part II, Sections 6.2 or 8 of the Form R. However, because the *facility* is repackaging and distributing the *toxic chemicals* in commerce, it should consider these amounts of the *toxic chemical* towards the *facility*'s *processing* threshold. If the *covered facility* exceeds a chemical activity threshold, it is required to file a TRI Report for that chemical.

590 – If I send ten pounds of chromium (or any metal) to a POTW or other wastewater treatment *facility* where should I report the ten pounds in Section 8 of the Form R?

Because metals cannot be destroyed, they should not be reported as treated in Part II, Section 8.6 or 8.7 of the Form R. If you do not know what the POTW does with the metal constituents they receive, you should assume they are *released* and report the ten pounds sent to a POTW in Part II, Section 8.1 on the Form R.

Appendix B Part 2:
Questions and Answers Received Since Promulgation of the Lead Rule

Question 1:

Under this new rule, are dental offices or manufacturers of dental equipment now required to report releases and other waste management activities of lead? That is, are dental offices required to submit EPCRA section 313 release (Form R) reports to the U.S. EPA and state and tribal governments? Is there a specific exemption for dental offices?

Answer: A facility is required to file Form R reports if it meets all three of the following criteria: 1) it is included in certain Standard Industrial Classification (SIC) codes; 2) it has 10 or more full-time employee equivalents (i.e., the equivalent of 20,000 hours per year); and 3) it manufactures (includes imports), processes, or otherwise uses any of the toxic chemicals (e.g., lead, lead compounds) listed on the EPCRA Section 313 list in amounts greater than the threshold quantities. There is no specific exemption for dental offices. While private dental offices have been assigned an SIC code (SIC code 8021), this SIC code is not covered under EPCRA section 313 and, therefore, private dental offices do not have to report their releases or other waste management activities of chemicals listed on the EPCRA section 313 list of toxic chemicals. To determine if a given facility (including dental offices and manufacturers of dental equipment) is subject to the reporting requirements of EPCRA section 313 one should first determine the facility's primary SIC code, and if the SIC code is regulated under EPCRA section 313. A listing of the SIC groups (with codes) subject to EPCRA section 313 reporting requirements is provided in the introductory section of EPA's publication: "EPCRA Section 313 Questions and Answers [Q&As] - Revised 1998 Version" (December 1998, EPA 745-B-98-004). (The Q&A document is available at **http://www.epa.gov/tri/guidance.htm.)** This listing is also provided below. For a facility that meets the SIC code requirement one should then determine whether the facility meets the employee threshold before they determine if they exceed the processing, manufacturing, and otherwise use activity thresholds of a listed chemical.

Standard Industrial Classification (SIC) groups subject to EPCRA section 313 reporting requirements:

Metal mining (SIC code in the 1000s, except for SIC codes 1011, 1081, and 1094)

Coal mining (SIC codes in the 1200s, except for 1241 and extraction activities)

Primary codes 2000-3900 (Manufacturing Industries including: 2000 Food, 2100 Tobacco, 2200 Textiles, 2300 Apparel, 2400 Lumber and Wood, 2500 Furniture, 2600 Paper, 2700 Printing and

Publishing, 2800 Chemicals, 2900 Petroleum and Coal, 3000 Rubber and Plastics, 3100 Leather, 3200 Stone, Clay, and Glass, 3300 Primary Metals, 3400 Fabricated Metals, 3500 Machinery (excluding electrical), 3600 Electrical and Electronic Equipment, 3700 Transportation Equipment, 3800 Instruments, 3900 Miscellaneous Manufacturing)

Electrical utilities that combust coal and/or oil (SIC codes 4911, 4931, and 4939, limited to facilities that combust coal and/or oil for the purpose of generating electricity for distribution in commerce)

Hazardous waste treatment and disposal facilities (SIC code 4953, limited to facilities regulated under the Resource Conservation and Recovery Act, Subtitle C, 42 U.S.C. section 6921 et seq.)

Chemicals and allied products wholesale distributors (SIC code 5169)

Petroleum bulk plants and terminals (SIC code 5171)

Solvent recovery services (SIC code 7389, (limited to facilities primarily engaged in solvent recovery services on a contract or fee basis)

Question 2:

Will facilities affected by the new TRI lead rule have to consider their manufacturing, processing, and usage of lead and lead compounds for ALL of 2001, or just the portion of 2001 subsequent to April 17, the date the rule finally became effective?

Answer: The first reporting year for the new TRI lead rule began January 1, 2001 and ends December 31, 2001. Facilities will have to report to EPA their release and other waste management activities for the entire 2001 calendar year no later than July 1, 2002. This means that any facility affected by the new TRI lead rule must consider manufacturing, processing and otherwise use activities involving lead and lead compounds that took place at their facility from January 1, 2001 through December 31, 2001, to determine whether they have exceeded the activity threshold for reporting and calculating releases and other waste management activities of lead and lead compounds.

Question 3:

3a) Does the new TRI lead rule encompass leaded glass in computer screens after they are disposed of by a company from a typical office environment? [Assume the company receives the computers intact and simply uses them as computers, as opposed to actually manufacturing computers, and then disposes of the computers.] Would this “use” of lead be considered exempt from the

regulation for the normal user of computers/screens? Also, would the solder used on the computer circuit cards be exempt for the user of computers and hence not reportable, after proper disposal by the user ?

3b) Does the new TRI lead rule encompass plumbing that is being removed from service in a building during renovations or modifications ?

Answer: The computers in scenario **3a** and pipes in scenario **3b** above would likely qualify as articles eligible for the articles exemption. That is, chemicals included on the EPCRA section 313 list of toxic chemicals that are contained in articles (e.g., computers, pipes) are exempt from both threshold determinations *and* release and other waste management calculations (i.e., exempt from inclusion on a Form R report) provided that the item meets the criteria of the articles exemption. However, if a facility were to take the computers or pipes and modify them in a way such that they are no longer articles (e.g., melt them), the facility may be subject to EPCRA section 313 reporting requirements. For additional information on article exemptions see Directive 1, Article Exemptions in "EPCRA Section 313 Questions and Answers [Q&As] - Revised 1998 Version" (EPA 745-B-98-004) (The Q&A document is available at http://www.epa.gov/tri/guidance.htm.)

Question 4:
The following questions pertain to facilities that use lead as a source of protection from radioactive materials.

Question 4a). <u>Facility # 1</u> is a pharmaceutical manufacturing facility. They manufacture radioactive materials that are used in medical treatments. Lead shields are used to protect workers from the radioactive materials. No lead is released from the use of the shields. Would this qualify for the "personal use" exemption ?

Question 4b). <u>Facility # 2</u> uses lead bricks as a barrier to protect workers and other people from radioactivity. The bricks are permanent, they are never removed or replaced, but they are not built into the facility (i.e., they are not part of the facility). No lead is released from the bricks. [This question is similar to Q & A # 277, of the "EPCRA Section 313 Questions and Answers [Q&As] - Revised 1998 Version"] Does this qualify for any exemptions, i.e. structural components exemption or articles exemption? Please answer the question in two ways:

(i) as it applies to lead in bricks used at the facility before the enactment of the lead rule;

(ii) if and how the lead rule would change the answer to (i).

Answer: With regard to **Facility #1**, it appears that the lead shields would meet the definition of an article and qualify for the articles exemption. These shields, however, would not qualify for the personal use exemption because the shields are process related. (See Q&A 243 in "EPCRA Section 313 Questions and Answers [Q&As] - Revised 1998 Version". The Q&A document is available at http://www.epa.gov/tri/guidance.htm.)

With regard to **Facility #2**, if in fact no lead is released from the bricks then, again, the articles exemption may apply. The structural component exemption would not apply because these bricks are facility-process related. (See Q&A 277 of "EPCRA Section 313 Questions and Answers [Q&As] - Revised 1998 Version". The Q&A document is available at http://www.epa.gov/tri/guidance.htm.) Lastly, per sub-questions (i) and (ii), the lead rule did not change the articles exemption.

Question 5:
The following questions pertain to lead in stainless steel, brass or bronze alloys.

5a) With regard to alloys of stainless steel, brass and bronze that contain lead ----- does this mean that these alloys in whatever form, solid or molten, are exempt from the 100 lb activity threshold for reporting releases and other waste management activities for lead ?

5b) Does this also mean that any fumes from these alloys as a result, for example, of welding are also exempt?

5c) Does this also mean that these alloys do not have a 25,000 or 10,000 pound threshold for lead?

Answer: The final TRI lead rule states that the 25,000 lb manufacturing, processing, and 10,000 lb otherwise use activity thresholds for reporting releases and other waste management activities of lead and lead compounds have been lowered to 100 lbs. The final TRI lead rule further states that the reporting threshold of 100 lb applies to all lead compounds and to lead except for lead <u>contained in</u> stainless steel, brass, and bronze alloys. There is no "exemption" for lead contained in stainless steel, brass, and bronze alloys: lead in these alloys are still subject to the manufacture and process threshold of 25,000 lbs, and an otherwise use threshold of 10,000 lbs.

Regarding stainless steel, brass or bronze alloys that contain lead, EPA's interpretation is that the 100 lb threshold does not apply while the lead is literally in (i.e., a component of) the alloy. While the 100 lb threshold does not apply to lead while it is in stainless steel, brass and bronze alloys, there may be certain activities that involve these alloys in which the 100 lb threshold will apply.

Below is a brief logic tree that can help one to determine whether the 100 lb threshold applies and/or 25,000 lb/10,000 lb threshold applies.

a) If a facility uses lead or a lead compound in the manufacture of a stainless steel alloy, bronze alloy, or brass alloy that contains lead, the 100 lb threshold applies to the lead or lead compound(s) used in the manufacture of the alloy. Thus, in this scenario, the facility is using lead to manufacture the alloy and the 100 lb threshold applies to that amount of lead being used in the manufacture of the alloy.

b) If a facility is processing a lead-containing stainless steel, bronze, or brass alloy in such a way that lead is removed / released from the alloy, the 100 lb threshold applies to that amount of lead that has been removed /released. For example, a facility obtains a stainless steel alloy that contains lead. The stainless steel alloy is melted, and while in a molten state some lead fumes are generated. Some of these fumes are released into the environment via stacks. The facility must apply the 100 lb threshold to that amount of lead that volatilized from the molten, stainless steel alloy, and report if a threshold is exceeded that amount of lead that has been released through a stack in section 5.2 of Form R. In addition, because the stainless steel alloy is being processed, the lead contained in the alloy must be applied to the 25,000 lb processing threshold. Thus, in this scenario, there are two thresholds that need to be applied: the 100 lb threshold for that quantity of the lead that has been removed/released from the alloy; the 25,000 lb processing threshold for lead in the alloy itself. The 100 lb threshold also applies to fumes of lead that are generated from welding of stainless steel, bronze or brass alloys.

c) If a facility is processing a lead-containing stainless steel, bronze, or brass alloy in such a way that the lead is **not** removed/released from the alloy, the 100 lb threshold **does not** apply. For example, a facility obtains 100,000 lb of a stainless steel alloy that contains lead. The stainless steel alloy is processed in such a way that no lead is removed/released from the alloy. The facility need only apply the 25,000 lb threshold to the processing of stainless steel alloy.

d) If a facility is otherwise using a stainless steel, bronze or brass alloy that contains lead, the 10,000 lb threshold applies to the entire amount of lead in the alloy. If any lead is removed/released from the alloys during the otherwise use activity, the 100 lb threshold also applies to that amount of lead that was removed/released.

Some important guidelines to use are:

1) quantities of lead “in stainless steel, brass or bronze alloy,” are only applied toward the 25,000/10,000 pound threshold;

2) quantities of lead not in stainless steel, brass or bronze alloys is applied to both the 100 pound threshold and the 25,000/10,000 pound threshold;

3) a facility may take the *de minimis* exemption (i.e., threshold variable) for those quantities of lead in stainless steel, brass, or bronze alloys that meet the *de minimis* exemption requirements (*e.g.*, manufactured as an impurity). The *de minimis* exemption applies to threshold determinations addressing numerous activities at a facility. The combined total of these threshold determinations leads to a final conclusion regarding whether one report for lead must be filed. Accordingly, EPA will allow the *de minimis* exemption to be considered for all quantities of lead in stainless steel, brass, or bronze alloy even though this exemption will not be applied to lead not in stainless steel, brass, or bronze alloy. However, the *de minimis* standard does not include listed substances that are manufactured as byproducts. More details on this point are available. (See Appendix A, Directive 2 of "EPCRA Section 313 Questions and Answers [Q&As] - Revised 1998 Version". The Q&A document is available at http://www.epa.gov/tri/guidance.htm.)

4) the reporting variables (Form A and range reporting for Sections 5 and 6 of Part II of the Form R) may not be applied to lead reporting once the lower, 100 pound threshold has been exceeded. Therefore, if a facility exceeds the 25,000/10,000 pound threshold but does not exceed the 100 pound threshold, the facility may consider the reporting variables. Once the 100 pound threshold is exceeded, the facility may not use the reporting variables even if the 25,000/10,000 pound threshold is also exceeded.

5) consolidated reporting between lead and lead compounds is allowed.

5d) Why is lead in brass, bronze, or stainless steel not a PBT chemical while lead in any other alloy is a PBT chemical?

Answer: This question mischaracterizes the PBT properties of lead. Lead is a PBT chemical, regardless of whether it is in an alloy or in the form of a compound or its metallic form. The form or mixture that lead is in does not determine whether it is a PBT chemical. Lead in any alloy, including stainless steel, brass or bronze is a PBT chemical. EPA has deferred on a decision to lower the 25,000 lb and 10,000 lb thresholds for lead when contained in stainless steel, brass, and bronze alloys. EPA's deferral for the lower threshold for lead when contained in stainless steel, brass, and bronze alloys was based on the fact that the Agency is currently evaluating a petition, as well as comments received in response to previous petition denials, that requested the Agency to revise the EPCRA section 313 reporting requirements for certain metals contained in stainless steel, brass, and bronze alloys. In light of the ongoing scientific review, EPA has decided to defer the lower thresholds for lead when contained in these alloys until the review is complete. Other alloys are not part of this review since the Agency did

not receive any information or data from commenters that would allow the Agency to conclude that lead in all other alloys are similarly situated.

5e) A facility processes 200 pounds of lead in alloys other than the brass, bronze, or stainless steel alloy and processes 24,000 pounds of lead in brass, bronze, or stainless steel and therefore must file a Form R for lead. Does the facility need to include releases and waste management activities of the lead in brass, bronze, and stainless steel on the Form R?

Answer: No, because the 25,000 lb processing threshold is not exceeded in this scenario. There are two thresholds to consider in this scenario: the 100 lb threshold for lead **not** in stainless steel, brass or bronze alloys, and the 25,000 processing threshold for all lead, including lead in stainless steel, brass and bronze alloys (i.e., the qualified alloys). In this scenario the 100 lb activity threshold is exceeded, but the 25,000 lb activity threshold is not exceeded. The 100 lb threshold is exceeded because of the processing of 200 lbs of lead in alloys other than stainless steel, brass or bronze. The 25,000 lb threshold is not exceeded because the combined weight of lead in the qualified alloys and non-qualified alloys does not exceed 25,000 lbs (24,000 lbs + 200 lbs = 24,200 lbs). If, however, in this scenario the amount of processed lead in brass, bronze, or stainless steel were 24,850 lbs, then both the 100 lb threshold and the 25,000 lbs thresholds are exceeded.

Some important guidelines to use are:

a) quantities of lead "in stainless steel, brass or bronze alloy," are only applied toward the 25,000/10,000 pound threshold;

b) quantities of lead <u>not</u> in stainless steel, brass or bronze alloys are applied to both the 100 pound threshold and the 25,000/10,000 pound threshold;

c) a facility may take the *de minimis* exemption (i.e., threshold variable) for those quantities of lead in stainless steel, brass, or bronze alloys that meet the *de minimis* exemption requirements (*e.g.*, manufactured as an impurity). The *de minimis* exemption applies to threshold determinations addressing numerous activities at a facility. The combined total of these threshold determinations leads to a final conclusion regarding whether <u>one</u> report for lead must be filed. Accordingly, EPA will allow the *de minimis* exemption to be considered for all quantities of lead in stainless steel, brass, or bronze alloy even though this exemption will not be considered for lead <u>not</u> in stainless steel, brass, or bronze alloy.

d) the reporting variables (Form A and range reporting for Sections 5 and 6 of Part II of the Form R) may not be applied to lead reporting once the lower, 100 pound threshold has been exceeded.

Therefore, if a facility exceeds the 25,000/10,000 pound threshold but does not exceed the 100 pound threshold, the facility may consider the reporting variables. Once the 100 pound threshold is exceeded, the facility may not use the reporting variables even if the 25,000/10,000 pound threshold is also exceeded.

e) because there is only one listing for lead, consolidated reporting between lead and lead compounds is allowed.

5f) If a facility processes 95 pounds of lead in alloys other than brass, bronze, or stainless steel and processes 24,910 pounds of lead in brass, bronze, or stainless steel, does the facility need to prepare a Form R?

Answer: Yes, because the 25,000 lb threshold for lead in stainless steel, brass or bronze has been exceeded. The 100 lb threshold for lead has not been exceeded. In this scenario the facility may consider the *de minimis* exemption for quantities of lead in stainless steel, brass, or bronze alloy and the facility may consider the use of Form A, range reporting, and pre-PBT significant digits requirements options.

5g) If I use lead in both cold rolled steel and stainless steel, and I exceed the 100 pounds threshold for lead in the cold rolled steel, do I then have to consider for my Form R the releases from both the stainless and the cold rolled steel, or just the releases from the cold rolled steel?

Answer: If a facility exceeds a threshold for lead of 25,000 pounds manufactured, 25,000 pounds processed, or 10,000 pounds otherwise used, then all lead (except for specific quantities qualifying for one of the exemptions) at the facility is reportable. However, if only the 100 pound threshold for manufacturing, processing or otherwise use is exceeded for "lead (except when contained in stainless steel, brass, or bronze alloy)" then lead is reportable except when contained in the qualified alloys.

Question 6:

Please point me in the direction of a place where I can see specifics about Form R and what information is required to complete Form R for lead.

Answer: A good place to start is to go to EPA's Toxic Release Inventory Program's internet home page: **http://www.epa.gov/tri/**. Once you are at this site, select "Reporting Forms and Instructions" for information about Form R, how to complete a Form R report, as well as other related information. You may also want to browse the Toxics Release Inventory Public Data Release report, which is

published annually by the EPA's Office of Environmental Information. Information pertaining to obtaining a copy of this report is also available from the above internet address.

Question 7:

Piston-powered aircraft currently use leaded aviation fuel (AVGAS). There seems to be some question as to whether the new 100 lb reporting threshold for lead and lead compounds would apply to businesses that transport, store, and sell leaded AVGAS. There is also some concern that the new reporting requirements may also apply to businesses that consume leaded AVGAS through the operation of their aircraft. What is the applicability of the leaded compound reporting requirements to the general aviation industry?

Answer: To address these questions concerning the reporting of lead contained in leaded gasoline used in aviation fuels several factors need to be considered. The first is whether the facility is in a Standard Industrial Classification (SIC) code covered under section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA). In addition, under EPCRA section 313 there is a motor vehicle exemption that exempts the otherwise use of fuel in motor vehicles (including aircraft). Also, while petroleum bulk terminals (SIC code 5171) are covered facilities, not all facilities that transport, store, and sell AVGAS are in covered SIC codes. (The complete list of SIC codes covered by section 313 of EPCRA is listed in the answer to question 1 above.)

Below are excerpts from the Response-to-Comments document from the final TRI lead rule that lowered the EPCRA section 313 reporting thresholds for lead and lead compounds. These excerpts contain EPA's responses to comments pertaining to the SIC code issue. Also provided below are: 1) some questions and answers from EPA's document "EPCRA Section 313 Questions and Answers [Q&As] - Revised 1998 Version"; and 2) the directive on the motor vehicle exemption from the Q&A document. The Q&As below mention aircraft specifically but there are additional Q&As on fuels and motor vehicles (e.g., Q&As 285-291), the Q&A document is available at http://www.epa.gov/tri/guidance.htm.

EPA does not expect that aviation businesses would be affected by lower reporting thresholds for lead and lead compounds. As a group, establishments engaged in furnishing transportation by air and in operating airports and flying fields are found in major SIC code 4500 (Transportation by air). This is not an SIC code that is subject to reporting under EPCRA section 313. In addition, many of the examples of lead and lead compound uses in aviation commenter–ballasts, flight controls, wheels, and propellers–are likely to be covered by the article exemption in their use.

The following two questions and answers and directive are from the "EPCRA Section 313 Questions and Answers - Revised 1998 Version" (December 1998, EPA-745-B-98-004).

192. A *covered facility* manufactures and repairs airplanes. Prior to beginning any repair work, any fuel remaining in the airplane's fuel tanks is emptied by service personnel at the *facility*. After the repairs are completed, the airplane is refueled with fuel removed from the airplane's fuel tanks and/or new fuel. Should the owner/operator of the manufacturing and repair facility consider the *toxic chemicals* present in the fuel when making Section 313 threshold and *release* and other *waste management* calculations?

Yes. For purposes of EPCRA Section 313 threshold determinations and *release* and other *waste management* calculations, the listed *toxic chemicals* present in the fuel are considered to be *processed* because they are being repackaged and further distributed in commerce.

290. An airplane manufacturer uses JP4, a jet fuel, to move the planes around the *facility*. Can this fuel be considered exempt under the "maintenance of motor vehicles used at the facility" exemption?

Amounts of fuel used only at the *facility* to transport vehicles on the facility's property do not have to be counted towards thresholds and can be included under the motor vehicle exemption. If the jet fuel is in the planes when they leave the site to be sold or distributed in commerce, then the facility is considered to be *processing* the jet fuel and the listed chemicals in the fuel are subject to threshold determinations and *release* and other *waste management* calculations.

Motor Vehicle Exemptions

The use of "products containing toxic chemicals for the purpose of maintaining motor vehicles operated by the facility" is exempt from threshold determinations and release and other waste management reporting under Section 313. This exemption includes toxic chemicals found in gasoline, diesel fuel, brake and transmission fluids, oils and lubricants, antifreeze, batteries, cleaning solutions, and solvents in paint used for touch up, as long as the products are used to maintain the vehicle operated by the facility. Motor vehicles include cars, trucks, some cranes, forklifts, locomotive engines, and aircraft.

1. Motor Vehicle Use Exemption Applies Only to Otherwise Use of Chemical

The exemption applies only to the otherwise use of these chemicals, not their manufacturing or processing for distribution in commerce. For example, manufacturing gasoline is not exempt from reporting. Similarly, an automobile manufacturer who places transmission fluids in automobiles before shipping the automobiles would be processing the listed toxic chemical because the fluid is being incorporated into an item that the facility distributes in commerce.

Releases from the storage of fuel or motor vehicle maintenance products are exempt from reporting by virtue of the fact that their use is exempt. For example, releases of listed toxic chemicals in gasoline stored on-site for use by company owned vehicles are exempt from inclusion in facility-wide release and other waste management determinations for those chemicals.

2. Motor Vehicle Use Exemption Does Not Apply to Stationary Equipment

The motor vehicle exemption does not apply to the use of lubricants for stationary process equipment such as pumps or compressors. Likewise, fuels used for furnaces, boilers, heaters, or any stationary source of energy are not exempt.

Question 8:

Could EPA provide clarification on the applicability of the new TRI lead rule to stained glass manufacturers, stained glass studios, stained glass glaziers (window manufacturers), stained glass businesses that manufacture lamps, boxes, etc., studios that restore architectural stained glass, and glass blowing studios?

Answer: A facility is required to file Form R reports under the new TRI lead rule if it meets all three of the following criteria: 1) it is included in certain Standard Industrial Classification (SIC) codes; 2) it has 10 or more full-time employee equivalents (i.e., the equivalent of 20,000 hours per year); and 3) it manufactures (includes imports), processes, or otherwise uses more than 100 lbs of lead or lead compounds annually, or manufactures or processes 25,000 lbs or otherwise uses 10,000 lbs of lead in stainless steel, brass or bronze alloys. There are SIC codes that pertain to glass blowing and the manufacture of stained or colored glass that are covered under EPCRA section 313. These are: SIC code 3231, stained glass, manufactured from purchased glass; SIC code 3211, manufacture of colored glass, cathedral and antique; SIC codes 3229 and 3231, decorative glass; SIC code 3559, glass making machinery, glass blowing, molding, forming, grinding, etc. There are other SIC codes that pertain to the manufacture, processing or otherwise use of glass products and that are covered under

EPCRA section 313. There is a SIC code (8999) that pertains to stained glass artists, but this SIC code is not covered under EPCRA section 313.

Question 9:

A facility exceeds the lead threshold. The facility also has lead piping in its operations. The natural degradation of the lead piping causes lead to be released in wastewater. Does the facility need to report this lead as released to water on the Form R required to be submitted?

Answer: Yes. While the release of lead from the pipes is not related to a threshold activity (i.e., a release activity by itself does not constitute the manufacture, processing, or otherwise use of lead or a lead compound), once the lead threshold has been exceeded as result of manufacturing, processing, or otherwise use of lead or a lead compound elsewhere at the facility all other non-exempt releases and other waste management activities of lead must be included on the Form R. Such releases, however, are not considered in determining whether an activity threshold has been exceeded. For example, in the above scenario the release of lead from degradation of the pipes would not be added to the quantity that is being applied to the threshold determination. Pipes used in a non-process related activity may also qualify for the structural component exemption.

Question 10:

From a review of the regulatory guidance, it has been tentatively determined that the soldering of printed circuit (PC) boards with a lead containing solder must be tracked as a processing activity resulting in a release of lead. The soldering of the PC board negates the exemption the board would otherwise have as an "article". The regulations formerly allowed a total annual release for this activity of up to 0.5 pounds of lead to be rounded down to zero, but it looks like under the new PBT regulations, this falls to 0.05 pounds. What we would like to know is:

10a) whether our interpretation is correct that this needs to be tracked and the "round-down to zero" number for total releases is now 0.05 pounds; and

10b) what should be accounted for in terms of lead used/processed (the lead content of the solder alone or the lead content of the solder and the lead content of the item soldered [PC Board]?).

Answers: The 0.5 pound cut-off is still used. All quantities of lead (i.e., the content of lead in the solder applied to the printed circuit board, as well as the content of lead already contained in the printed circuit board.)

APPENDIX C

Emission Factors Compiled from Various Sources

The data fields shown in Table C-1 in this appendix are as follows:

1) *Material* - The substance being manufactured, processed, or combusted.
2) *Source Classification Code* - A numeric code related to the material and controls.
3) *Primary Control* - The primary air pollution control device used on the tested source if applicable.
4) *Secondary Control* - The secondary air pollution control device used on the tested source if applicable.
5) *Emission Factor* - The numerical result of the source test, usually an average of many tests.
6) *Unit* - The measurement of the air emissions, usually in pounds of lead.
7) *Measure* - The measurement of the amount of material manufactured, processed, or combusted.
8) *Action* - Whether the material was manufactured, processed, or combusted.
9) *Notes* - Any qualifications that must be reported regarding the use or interpretation of the emission factor.
10) *Formula* - Any equation that must be reported regarding the use or interpretation of the emission factor.
11) *Reference* - The document describing the development of the emission factor.
12) *Quality* - A data quality rating (e.g., A, B, C, D, E, or U) as defined below.

Data quality ratings for the source tests and the number of source tests available for a given emission point were used to create the emission factor quality ratings shown in the FIRE database. Because of the difficult task of assigning a meaningful confidence limit to industry-specific variables (e.g., sample size vs. sample population, industry and facility variability, method of measurement), the use of a statistical confidence interval for establishing a representative emission factor for each source category was not practical. Therefore, some subjective quality rating was necessary. The following quality ratings were used in the emission factor tables in the FIRE Data System:

A Excellent. Emission factor is developed primarily from A- and B-rated source test data taken from many randomly chosen facilities in the industry population. The source category population is sufficiently specific to minimize variability.

B Above average. Emission factor is developed primarily from A- or B-rated test data from a moderate number of facilities. Although no specific bias is evident, it is not clear if the facilities tested represent a random sample of the industry. As with the A rating, the source category population is sufficiently specific to minimize variability.

C Average. Emission factor is developed primarily from A-, B-, and C-rated test data from a reasonable number of facilities. Although no specific bias is evident, it is not clear if the facilities tested represent a random sample of the industry. As with the A rating, the source category population is sufficiently specific to minimize variability.

D Below average. Emission factor is developed primarily from A-, B-, and C-rated test data from a small number of facilities, and there may be reason to suspect that these facilities do not represent a random sample of the industry. There also may be evidence of variability within the source population.

E Poor. Factor is developed from C- rated and D-rated test data from a very few number of facilities, and there may be reasons to suspect that the facilities tested do not represent a random sample of the industry. There also may be evidence of variability within the source category population.

U Unrated (Only used in the L&E documents). Emission factor is developed from source tests that have not been thoroughly evaluated, research papers, modeling data, or other sources that may lack supporting documentation. The data are not necessarily "poor," but there is not enough information to rate the factors according to the rating protocol.

Table C-1

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Air-Dried Unbleached Pulp	30700106	Uncontrolled		1.088E-4	Lb	Tons	Produced	Detection limits used for non-detects.		ECOSERVE, Inc. Environmental Services. November 27, 1990. In: Pooled Air Toxics Source Test Program for Kraft Pulp Mills, Report Number 2. Report #1249A. Simpson Paper Company. Anderson, California.	U
Anthracite	10200101	Uncontrolled		8.900E-3	Lb	Tons	Burned			EPA. 1995. Section 1.2, Anthracite Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Anthracite	10200107	Uncontrolled		8.900E-3	Lb	Tonsao	Burned			EPA. 1995. Section 1.2, Anthracite Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Anthracite	10100102	Uncontrolled		8.900E-3	Lb	Tons	Burned			EPA. 1995. Section 1.2, Anthracite Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Anthracite	10300103	Uncontrolled		8.900E-3	Lb	Tons	Burned			EPA. 1995. Section 1.2, Anthracite Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Anthracite	10300102	Uncontrolled		8.900E-3	Lb	Tons	Burned			EPA. 1995. Section 1.2, Anthracite Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Anthracite	10300101	Uncontrolled		8.900E-3	Lb	Tons	Burned			EPA. 1995. Section 1.2, Anthracite Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Anthracite	10200104	Uncontrolled		8.900E-3	Lb	Tons	Burned			EPA. 1995. Section 1.2, Anthracite Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Anthracite	10100101	Uncontrolled		8.900E-3	Lb	Tons	Burned			EPA. 1995. Section 1.2, Anthracite Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Bark	10300901	Uncontrolled		2.900E-3	Lb	Tons	Burned	Units are lb of pollutant/ton of wood waste burned. Emission factors are based on wet, as-fired wood waste with average properties of 50 weight% moisture and 4500 Btu/lb higher heating value.		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Bark	10200904	Uncontrolled		4.450E-4	Lb	Tons	Burned	Emission factors are based on wet, as-fired wood waste with average properties of 50 weight percent moisture and 2,500 kcal/kg (4,500 Btu/lb) higher heating value.		EPA. October, 1996. Section 1.6, Table 5, Wood Waste Combustion in Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement B. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Bark	10200904	Uncontrolled		2.900E-3	Lb	Tons	Burned	Units are lb of pollutant/ton of wood waste burned. Emission factors are based on wet, as-fired wood waste with average properties of 50 weight% moisture and 4500 Btu/lb higher heating value.		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Bark	10200901	Uncontrolled		4.450E-4	Lb	Tons	Burned	Emission factors are based on wet, as-fired wood waste with average properties of 50 weight percent moisture and 2,500 kcal/kg (4,500 Btu/lb) higher heating value.		EPA. October, 1996. Section 1.6, Table 5, Wood Waste Combustion in Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement B. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Bark	10100901	Uncontrolled		4.450E-4	Lb	Tons	Burned	Emission factors are based on wet, as-fired wood waste with average properties of 50 weight percent moisture and 2,500 kcal/kg (4,500 Btu/lb) higher heating value.		EPA. October, 1996. Section 1.6, Table 5, Wood Waste Combustion in Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement B. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Bark	10100901	Uncontrolled		2.900E-3	Lb	Tons	Burned	Units are lb of pollutant/ton of wood waste burned. Emission factors are based on wet, as-fired wood waste with average properties of 50 weight% moisture and 4500 Btu/lb higher heating value.		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Bark	10300901	Uncontrolled		4.450E-4	Lb	Tons	Burned	Emission factors are based on wet, as-fired wood waste with average properties of 50 weight percent moisture and 2,500 kcal/kg (4,500 Btu/lb) higher heating value.		EPA. October, 1996. Section 1.6, Table 5, Wood Waste Combustion in Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement B. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Bark	10100901	Miscellaneous Control Devices		4.450E-4	Lb	Tons	Burned	Units are lb of pollutant/ton of wood waste burned. Emission factors are based on wet, as-fired wood waste with average properties of 50 weight% moisture and 4500 Btu/lb higher heating value. Emission factor represents measurements from wood waste combustors equipped with PM controls (i.e., fabric filters, multi-cyclones, ESP, and wet scrubbers).		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Bark	10200901	Uncontrolled		2.900E-3	Lb	Tons	Burned	Units are lb of pollutant/ton of wood waste burned. Emission factors are based on wet, as-fired wood waste with average properties of 50 weight% moisture and 4500 Btu/lb higher heating value.		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Bark	10200901	Miscellaneous Control Devices		4.450E-4	Lb	Tons	Burned	Units are lb of pollutant/ton of wood waste burned. Emission factors are based on wet, as-fired wood waste with average properties of 50 weight% moisture and 4500 Btu/lb higher heating value. Emission factor represents measurements from wood waste combustors equipped with PM controls (i.e., fabric filters, multi-cyclones, ESP, and wet scrubbers).		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Bark	10300901	Miscellaneous Control Devices		4.450E-4	Lb	Tons	Burned	Units are lb of pollutant/ton of wood waste burned. Emission factors are based on wet, as-fired wood waste with average properties of 50 weight% moisture and 4500 Btu/lb higher heating value. Emission factor represents measurements from wood waste combustors equipped with PM controls (i.e., fabric filters, multi-cyclones, ESP, and wet scrubbers).		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Bark	10200904	Miscellaneous Control Devices		4.450E-4	Lb	Tons	Burned	Units are lb of pollutant/ton of wood waste burned. Emission factors are based on wet, as-fired wood waste with average properties of 50 weight% moisture and 4500 Btu/lb higher heating value. Emission factor represents measurements from wood waste combustors equipped with PM controls (i.e., fabric filters, multi-cyclones, ESP, and wet scrubbers).		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Batteries	30400508	Baghouse		1.100E-1 - 1.200E-1	Lb	1000 Each	Produced			EPA. 1995. Section 12.15, Storage Battery Production. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	C
Batteries	30400510	Uncontrolled		7.700E-1 - 1.380E0	Lb	1000 Each	Produced			EPA. 1995. Section 12.15, Storage Battery Production. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Batteries	30400503	Uncontrolled		1.920E-1	Lb	Tons	Produced				U
Batteries	30400511	Uncontrolled		1.000E-1	Lb	1000 Each	Produced			EPA. 1995. Section 12.15, Storage Battery Production. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	C
Batteries	30400509	Uncontrolled		1.060E1 - 1.460E1	Lb	1000 Each	Produced			EPA. 1995. Section 12.15, Storage Battery Production. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Batteries	30400508	Uncontrolled		1.100E-1	Lb	1000 Each	Produced			EPA. September 1985. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fourth Edition with Supplements A, B, and C, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	U

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Batteries	30400505	Uncontrolled		1.530E1 - 1.770E1	Lb	1000 Each	Produced			EPA. 1995. Section 12.15, Storage Battery Production. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	U
Batteries	30400504	Uncontrolled		8.150E-1	Lb	Tons	Produced				U
Batteries	30400509	Fabric Filter		3.770E-1	Lb	1000 Each	Produced	Baghouse average efficiency of 97.5% - 98.5%. Lack of Supporting Documentation.	-	Composite. Radian FIRE database 1993 Release.	U
Batteries	30400502	Uncontrolled		5.900E-2	Lb	Tons	Produced				U
Batteries	30400501	Uncontrolled		1.177E0	Lb	Tons	Produced				U
Batteries	30400507	Uncontrolled		1.100E0 - 2.490E0	Lb	1000 Each	Produced			EPA. 1995. Section 12.15, Storage Battery Production. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Batteries	30400506	Uncontrolled		7.700E-1 - 9.000E-1	Lb	1000 Each	Produced			EPA. 1995. Section 12.15, Storage Battery Production. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Batteries	30400506	Rotoclone		6.730E-2	Lb	1000 Each	Produced	Lack of Supporting Documentation.		Composite. Radian FIRE database 1993 Release.	U

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Bituminous Coal	10100201	Uncontrolled		1.330E-2	Lb	Tons	Burned	Based on literature review.		EPA. 1995. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Bituminous Coal	10100205	Uncontrolled		1.330E-2	Lb	Tons	Burned	Based on literature review.		EPA. 1995. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Bituminous Coal	10300208	Uncontrolled		1.330E-2	Lb	Tons	Burned	assumed same as other coal combustion lead factors.			E
Bituminous Coal	10300206	Miscellaneous Control Devices		4.200E-4	Lb	Tons	Burned	ESP or FABRIC FILTER only & WET LIMESTONE SCRUBBER or SPRAY DRYER w/ESP or FABRIC FILTER		EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Bituminous Coal	10300208	Multiple Cyclone W/o Fly Ash Reinjection		3.930E-2	Lb	Tons	Burned	CEM, flue gas O2 averaged 5.2%, CO2 12.9% (dry), 16% by weight mixed fuel. Lack of Supporting Documentation.		EPA. May 1986. In: Project Summary: Environmental Assessment of a Commercial Boiler Fired with a Coal/Waste Plastic Mixture. EPA-600/S7-86/011. U.S. Environmental Protection Agency, Air and Energy Engineering Research Laboratory. Research Triangle Park, North Carolina.	U
Bituminous Coal	10100218	Miscellaneous Control Devices		4.200E-4	Lb	Tons	Burned	ESP or FABRIC FILTER only & WET LIMESTONE SCRUBBER or SPRAY DRYER w/ESP or FABRIC FILTER		EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Bituminous Coal	10200202	Miscellaneous Control Devices		4.200E-4	Lb	Tons	Burned	ESP or FABRIC FILTER only & WET LIMESTONE SCRUBBER or SPRAY DRYER w/ESP or FABRIC FILTER		EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Bituminous Coal	10300208	Multiple Cyclone W/o Fly Ash Reinjection		1.210E-3	Lb	Tons	Burned	CEM, flue gas O2 averaged 7%, CO2 12% (dry). Lack of Supporting Documentation.		EPA. May 1986. In: Project Summary: Environmental Assessment of a Commercial Boiler Fired with a Coal/Waste Plastic Mixture. EPA-600/S7-86/011. U.S. Environmental Protection Agency, Air and Energy Engineering Research Laboratory. Research Triangle Park, North Carolina.	U
Bituminous Coal	10100202	Miscellaneous Control Devices		4.200E-4	Lb	Tons	Burned	ESP or FABRIC FILTER only & WET LIMESTONE SCRUBBER or SPRAY DRYER w/ESP or FABRIC FILTER		EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Bituminous Coal	10200205	Uncontrolled		1.330E-2	Lb	Tons	Burned	Based on literature review.		EPA. 1995. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Bituminous Coal	10300218	Miscellaneous Control Devices		4.200E-4	Lb	Tons	Burned	ESP or FABRIC FILTER only & WET LIMESTONE SCRUBBER or SPRAY DRYER w/ESP or FABRIC FILTER		EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Bituminous Coal	10200210	Uncontrolled		1.330E-2	Lb	Tons	Burned				U
Bituminous Coal	10300211	Uncontrolled		1.330E-2	Lb	Tons	Burned				U

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Bituminous Coal	10300214	Uncontrolled		1.330E-2	Lb	Tons	Burned	assumed same as other coal combustion lead factors.			E
Bituminous Coal	10200203	Uncontrolled		1.330E-2	Lb	Tons	Burned	Based on literature review.		EPA. 1995. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Bituminous Coal	10200206	Uncontrolled		1.330E-2	Lb	Tons	Burned	Lack of Supporting Documentation.		EPA. March 1982. In: Fossil Fuel Fired Industrial Boilers - Background Information, Volume 1: Chapters 1-9. EPA-450/3-82-006a. U.S. Environmental Protection Agency. Research Triangle Park, North Carolina.	U
Bituminous Coal	10100212	Miscellaneous Control Devices		4.200E-4	Lb	Tons	Burned	ESP or FABRIC FILTER only & WET LIMESTONE SCRUBBER or SPRAY DRYER w/ESP or FABRIC FILTER		EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Bituminous Coal	10200202	Uncontrolled		1.330E-2	Lb	Tons	Burned	Based on literature review.		EPA. 1995. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Bituminous Coal	10200201	Uncontrolled		1.330E-2	Lb	Tons	Burned	Based on literature review.		EPA. 1995. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Bituminous Coal	10300209	Uncontrolled		1.330E-2	Lb	Tons	Burned	Based on literature review.		EPA. 1995. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Bituminous Coal	10300206	Uncontrolled		1.330E-2	Lb	Tons	Burned	Based on literature review.		EPA. 1995. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Bituminous Coal	10200204	Uncontrolled		1.330E-2	Lb	Tons	Burned	Based on literature review.		EPA. 1995. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Bituminous Coal	10300205	Uncontrolled		1.330E-2	Lb	Tons	Burned	Based on literature review.		EPA. 1995. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Bituminous Coal	10300203	Uncontrolled		1.330E-2	Lb	Tons	Burned	Based on literature review.		EPA. 1995. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Bituminous Coal	10300216	Miscellaneous Control Devices		4.200E-4	Lb	Tons	Burned	ESP or FABRIC FILTER only & WET LIMESTONE SCRUBBER or SPRAY DRYER w/ESP or FABRIC FILTER		EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Bituminous Coal	10200212	Miscellaneous Control Devices		4.200E-4	Lb	Tons	Burned	ESP or FABRIC FILTER only & WET LIMESTONE SCRUBBER or SPRAY DRYER w/ESP or FABRIC FILTER		EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Bituminous Coal	10200218	Miscellaneous Control Devices		4.200E-4	Lb	Tons	Burned	ESP or FABRIC FILTER only & WET LIMESTONE SCRUBBER or SPRAY DRYER w/ESP or FABRIC FILTER		EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Bituminous Coal	10300203	Miscellaneous Control Devices		4.200E-4	Lb	Tons	Burned	ESP or FABRIC FILTER only & WET LIMESTONE SCRUBBER or SPRAY DRYER w/ESP or FABRIC FILTER		EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Bituminous Coal	10200203	Miscellaneous Control Devices		4.200E-4	Lb	Tons	Burned	ESP or FABRIC FILTER only & WET LIMESTONE SCRUBBER or SPRAY DRYER w/ESP or FABRIC FILTER		EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Bituminous Coal	10100202	Uncontrolled		1.330E-2	Lb	Tons	Burned	Based on literature review.		EPA. 1995. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Bituminous Coal	10100203	Uncontrolled		1.330E-2	Lb	Tons	Burned	Based on literature review.		EPA. 1995. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Bituminous Coal	10100204	Uncontrolled		1.330E-2	Lb	Tons	Burned	Based on literature review.		EPA. 1995. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Bituminous Coal	10300207	Uncontrolled		1.330E-2	Lb	Tons	Burned	Based on literature review.		EPA. 1995. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Bituminous Coal	10100203	Miscellaneous Control Devices		4.200E-4	Lb	Tons	Burned	ESP or FABRIC FILTER only & WET LIMESTONE SCRUBBER or SPRAY DRYER w/ESP or FABRIC FILTER		EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Body	31502101	Uncontrolled		6.620E-5	Lb	Each	Burned	Wrapping material = 4 lbs of cardboard and 2 lbs of wood.		Emissions Testing of a Propane Fired Incinerator at a Crematorium. October 29, 1992. (Confidential Report No. ERC-39)	U

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Brick	30500361	Uncontrolled		1.200E-4	Lb	Tons	Produced			EPA. August 1997. Section 11.3, Brick And Structural Clay Product Manufacturing. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement C. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Brick	30500311	Uncontrolled		1.500E-4	Lb	Tons	Produced			EPA. August 1997. Section 11.3, Brick And Structural Clay Product Manufacturing. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement C. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Brick	30500313	Uncontrolled		1.500E-4	Lb	Tons	Produced			EPA. August 1997. Section 11.3, Brick And Structural Clay Product Manufacturing. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement C. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Brick	30500310	Uncontrolled		1.500E-4	Lb	Tons	Produced			EPA. August 1997. Section 11.3, Brick And Structural Clay Product Manufacturing. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement C. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Bullion	30301002	Baghouse		6.700E-2	Lb	Tons	Processed	This includes emissions from dross kettles.		EPA. 1995. Section 12.6, Primary Lead Smelting. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Cans	30400109	Baghouse		5.180E-9	Lb	Pounds	Processed	Cans are 95% aluminum by weight.		Source Emissions Testing of an Aluminum Shredding and Delacquering System. March 26, 1992 and April 10, 1992. (Confidential Report No. ERC-8)	U

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Cans	30400109	Multiple Cyclones		1.080E-5	Lb	Pounds	Processed			Emissions Measurements of a Delaquering Unit for AB2588 Toxics. September 7, 1991. (Confidential Report No. ERC-32)	U
Cans	30400109	Venturi Scrubber		2.180E-6	Lb	Pounds	Processed	Cans are 95% aluminum by weight.		Source Emissions Testing of an Aluminum Shredding and Delacquering System. March 26, 1992 and April 10, 1992. (Confidential Report No. ERC-8)	U
Cement	30500613	Uncontrolled		4.000E-2	Lb	Tons	Produced			EPA. September 1985. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fourth Edition with Supplements A, B, and C, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	U
Cement	30500606	Uncontrolled		1.200E-1	Lb	Tons	Produced			EPA. September 1985. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fourth Edition with Supplements A, B, and C, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	U
Cement	30500717	Uncontrolled		2.000E-2	Lb	Tons	Produced			EPA. September 1985. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fourth Edition with Supplements A, B, and C, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	U
Cement	30500706	Uncontrolled		1.000E-1	Lb	Tons	Produced			EPA. September 1985. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fourth Edition with Supplements A, B, and C, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	U
Cement	30500617	Uncontrolled		4.000E-2	Lb	Tons	Produced			EPA. September 1985. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fourth Edition with Supplements A, B, and C, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	U

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Clinker	30500623	Fabric Filter		7.500E-5	Lb	Tons	Produced	This entry has 4 SCC's: 30500606, 30500706, 30500622, and 30500623.		EPA. 1995. Section 11.6, Portland Cement Manufacturing. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Clinker	30500706	Fabric Filter		7.500E-5	Lb	Tons	Produced	This entry has 4 SCC's: 30500606, 30500706, 30500622, and 30500623.		EPA. 1995. Section 11.6, Portland Cement Manufacturing. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Clinker	30500706	Electrostatic Precipitator		7.100E-4	Lb	Tons	Produced	This entry has 4 SCC's: 30500606, 30500706, 30500622, and 30500623.		EPA. 1995. Section 11.6, Portland Cement Manufacturing. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Clinker	30500622	Electrostatic Precipitator		7.100E-4	Lb	Tons	Produced	This entry has 4 SCC's: 30500606, 30500706, 30500622, and 30500623.		EPA. 1995. Section 11.6, Portland Cement Manufacturing. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Clinker	30500606	Electrostatic Precipitator		7.100E-4	Lb	Tons	Produced	This entry has 4 SCC's: 30500606, 30500706, 30500622, and 30500623.		EPA. 1995. Section 11.6, Portland Cement Manufacturing. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Clinker	30500622	Fabric Filter		7.500E-5	Lb	Tons	Produced	This entry has 4 SCC's: 30500606, 30500706, 30500622, and 30500623.		EPA. 1995. Section 11.6, Portland Cement Manufacturing. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Clinker	30500606	Fabric Filter		7.500E-5	Lb	Tons	Produced	This entry has 4 SCC's: 30500606, 30500706, 30500622, and 30500623.		EPA. 1995. Section 11.6, Portland Cement Manufacturing. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Clinker	30500623	Electrostatic Precipitator		7.100E-4	Lb	Tons	Produced	This entry has 4 SCC's: 30500606, 30500706, 30500622, and 30500623.		EPA. 1995. Section 11.6, Portland Cement Manufacturing. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Concentrated Ore	30301003	Uncontrolled		2.900E0	Lb	Tons	Processed				U
Concentrated Ore	30300502	Uncontrolled		1.500E-1	Lb	Tons	Processed	The emission factor is used to determine total process and fugitive emissions.		EPA. 1995. Section 12.3, Primary Copper Smelting. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	C
Concentrated Ore	30301001	Uncontrolled		1.050E2	Lb	Tons	Processed				U
Concentrated Ore	30300504	Uncontrolled		2.700E-1	Lb	Tons	Processed	The emission factor is used to determine total process and fugitive emissions.		EPA. 1995. Section 12.3, Primary Copper Smelting. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	C

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Concentrated Ore	30300503	Uncontrolled		7.200E-2	Lb	Tons	Processed	The emission factor is used to determine total process and fugitive emissions.		EPA. 1995. Section 12.3, Primary Copper Smelting. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	C
Concentrated Ore	30301006	Uncontrolled		1.740E2	Lb	Tons	Processed			EPA. September 1985. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fourth Edition with Supplements A, B, and C, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	U
Distillate Oil (No. 1 & 2)	10200501	Uncontrolled		1.250E-3	Lb	1000 Gallons	Burned	Literature review.		EPA. 1995. Section 1.3, Fuel Oil Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Distillate Oil	10300503	Uncontrolled		1.250E-3	Lb	1000 Gallons	Burned			EPA. 1995. Section 1.3, Fuel Oil Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Distillate Oil (No. 1 & 2)	10300501	Uncontrolled		1.250E-3	Lb	1000 Gallons	Burned	Literature review.		EPA. 1995. Section 1.3, Fuel Oil Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Distillate Oil (No. 1 & 2)	10100501	Uncontrolled		1.250E-3	Lb	1000 Gallons	Burned	Literature review.		EPA. 1995. Section 1.3, Fuel Oil Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Distillate Oil	10200503	Uncontrolled		1.250E-3	Lb	1000 Gallons	Burned			EPA. 1995. Section 1.3, Fuel Oil Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Distillate Oil	10200502	Uncontrolled		1.250E-3	Lb	1000 Gallons	Burned			EPA. 1995. Section 1.3, Fuel Oil Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Distillate Oil	10300502	Uncontrolled		1.250E-3	Lb	1000 Gallons	Burned			EPA. 1995. Section 1.3, Fuel Oil Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Distillate Oil (Diesel)	20100101	Uncontrolled		8.100E-3	Lb	1000 Gallons	Burned			EPA. 1995. Section 3.1, Stationary Gas Turbines for Electricity Generation. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Dried Sludge	50100515	Impingement Type Wet Scrubber		4.000E-2	Lb	Tons	Fed			EPA. 1995. Section 2.2, Sewage Sludge Incineration. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Dried Sludge	50100515	Miscellaneous Control Devices		2.200E-2	Lb	Tons	Fed	Control devices are single cyclone, venturi scrubber, and impingement scrubber.		EPA. 1995. Section 2.2, Sewage Sludge Incineration. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Dried Sludge	50100515	Venturi Scrubber	Wet Electrostatic Precipitator	1.800E-4	Lb	Tons	Fed			EPA. 1995. Section 2.2, Sewage Sludge Incineration. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Dried Sludge	50100515	Miscellaneous Control Devices		1.000E-1	Lb	Tons	Fed	Control devices are venturi scrubber, impingement type wet scrubber, and afterburner.		EPA. 1995. Section 2.2, Sewage Sludge Incineration. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Dried Sludge	50100515	Single Cyclone		6.000E-2	Lb	Tons	Fed			EPA. 1995. Section 2.2, Sewage Sludge Incineration. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Dried Sludge	50100516	Miscellaneous Control Devices		2.000E-6	Lb	Tons	Fed	Control devices are venturi scrubber, impingement type wet scrubber, and ESP.		EPA. 1995. Section 2.2, Sewage Sludge Incineration. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Dried Sludge	50100516	Impingement Type Wet Scrubber		6.000E-3	Lb	Tons	Fed			EPA. 1995. Section 2.2, Sewage Sludge Incineration. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Dried Sludge	50100515	Uncontrolled		1.000E-1	Lb	Tons	Fed			EPA. 1995. Section 2.2, Sewage Sludge Incineration. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Dried Sludge	50100516	Fabric Filter		1.000E-5	Lb	Tons	Fed			EPA. 1995. Section 2.2, Sewage Sludge Incineration. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Dried Sludge	50100515	Electrostatic Precipitator		2.000E-3	Lb	Tons	Fed			EPA. 1995. Section 2.2, Sewage Sludge Incineration. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Dried Sludge	50100516	Uncontrolled		4.000E-2	Lb	Tons	Fed			EPA. 1995. Section 2.2, Sewage Sludge Incineration. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Dried Sludge	50100515	Venturi Scrubber		1.800E-3	Lb	Tons	Fed			EPA. 1995. Section 2.2, Sewage Sludge Incineration. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Dried Sludge	50100515	Venturi Scrubber	Impingement Type Wet Scrubber	6.000E-2	Lb	Tons	Fed			EPA. 1995. Section 2.2, Sewage Sludge Incineration. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Dried Sludge	50100516	Venturi Scrubber	Impingement Type Wet Scrubber	1.600E-1	Lb	Tons	Fed			EPA. 1995. Section 2.2, Sewage Sludge Incineration. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Dried Sludge	50100515	Single Cyclone	Venturi Scrubber	6.000E-3	Lb	Tons	Fed			EPA. 1995. Section 2.2, Sewage Sludge Incineration. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Electrode	30905152	Uncontrolled		1.620E-1	Lb	1000 Pounds	Consumed	Current = 102 to 225 A; voltage = 21 to 34 V.		EPA. 1995. Section 12.19, Electric Arc Welding. In Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	C
Electrode	30905116	Uncontrolled		2.400E-2	Lb	1000 Pounds	Consumed	Current = 102 to 225 A; voltage = 21 to 34 V. Includes E310-15.		EPA. 1995. Section 12.19, Electric Arc Welding. In Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	C
Energy	30300702	Venturi Scrubber		6.060E0	Lb	Megawatt-Hour	Consumed	Lack of Supporting Documentation.		EPA. December 1980. In: A Review of Standards of Performance for New Stationary Sources - Ferroalloy Production Facilities. EPA-450/3-80-041. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	U
Fuel	20200101	Uncontrolled		1.400E-5	Lb	Million Btus	Input	Emission factors based on an average distillate oil heating value of 139 MMBtu/1000 gallons. To convert from (lb/MMBtu) to (lb/1000 gallons), multiply by 139.		EPA. 2000. Section 3.1, Stationary Gas Turbines for Electricity Generation. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency.	C
Fuel	20100101	Uncontrolled		1.400E-5	Lb	Million Btus	Input	Emission factors based on an average distillate oil heating value of 139 MMBtu/1000 gallons. To convert from (lb/MMBtu) to (lb/1000 gallons), multiply by 139.		EPA. 2000. Section 3.1, Stationary Gas Turbines for Electricity Generation. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency.	C

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Fuel	20200103	Uncontrolled		1.400E-5	Lb	Million Btus	Input	Emission factors based on an average distillate oil heating value of 139 MMBtu/1000 gallons. To convert from (lb/MMBtu) to (lb/1000 gallons), multiply by 139.		EPA. 2000. Section 3.1, Stationary Gas Turbines for Electricity Generation. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency.	C
Fuel	20300102	Uncontrolled		1.400E-5	Lb	Million Btus	Input	Emission factors based on an average distillate oil heating value of 139 MMBtu/1000 gallons. To convert from (lb/MMBtu) to (lb/1000 gallons), multiply by 139.		EPA. 2000. Section 3.1, Stationary Gas Turbines for Electricity Generation. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency.	C
Fuel	20300701	Uncontrolled		< 3.400E-6	Lb	Million Btus	Input	Compound was not detected. Emission factor is based on one-half of the detection limit. Emission factor based on an average digester gas heating value (HHV) of 600 Btu/scf at 60 deg. F. To convert from (lb/MMBtu) to (lb/10^6 scf) multiply by 600.		EPA. 2000. Section 3.1, Stationary Gas Turbines for Electricity Generation. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency.	D
Glaze	30500845	Uncontrolled		3.000E0	Lb	Tons	Used	Glaze being applied contained about 24% lead oxide.		EPA. October, 1996. Section 11.7, Ceramic Clay Manufacturing. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement B. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Gray Iron	30400302	Uncontrolled		1.200E-2 - 1.400E-1	Lb	Tons	Produced			EPA. 1995. Section 12.10, Gray Iron Foundries. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Gray Iron	30400301	Uncontrolled		1.000E-1 - 1.100E0	Lb	Tons	Produced			EPA. 1995. Section 12.10, Gray Iron Foundries. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Gray Iron	30400303	Uncontrolled		9.000E-3 - 1.000E-1	Lb	Tons	Produced			EPA. 1995. Section 12.10, Gray Iron Foundries. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Heat	31000413	Low Nox Burners		1.940E-6	Lb	Million Btus	Input			Composite. Radian FIRE database 1993 Release.	U
Heat	10200901	Electrostatic Precipitator - Medium Efficiency		1.500E-6	Lb	Million Btus	Input	F-factor 9,600 dscf/MMBtu. Emission factor developed from metal to PM ratio in front-half sample.		Galston Technical Services. February 1991. In: Source Emission Testing of the Wood-fired Boiler C Exhaust at Pacific Timber, Scotia, California. Performed for the Timber Association of California.	U
Heat	10200903	Wet Scrubber - Medium Efficiency		1.600E-5	Lb	Million Btus	Input	F-factor 9,420 dscf/MMBtu. Emission factor developed from metal to PM ratio in front-half sample.		Galston Technical Services. February 1991. In: Source Emission Testing of the Wood-fired Boiler #3 Exhaust at Georgia Pacific, Fort Bragg, California. Performed for the Timber Association of California.	U
Heat	10100903	Miscellaneous Control Devices		4.490E-6	Lb	Million Btus	Input	Control devices were limestone injection, thermal de-NOx with ammonia injection, water treatment, multi-cyclone dust collector, 8 compartment fabric collector.		Results of Source Testing at a Power Production Facility. (Confidential Report No. ERC-83)	U
Heat	10200906	Scrubber		1.140E-5	Lb	Million Btus	Input	Factors calculated using an F-factor for wood of 9240 dscf/MMBtu.		Determination of AB 2588 Emissions from a Wood-fired Boiler Exhaust. February 10 - 13, 1992. (Confidential Report No. ERC-63)	U
Heat	10200224	Uncontrolled		5.070E-4	Lb	Million Btus	Input			EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Heat	10200225	Uncontrolled		5.070E-4	Lb	Million Btus	Input			EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Heat	10100221	Uncontrolled		5.070E-4	Lb	Million Btus	Input			EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Heat	10101201	Electrostatic Precipitator		1.240E-4	Lb	Million Btus	Input			Composite. Radian FIRE database 1994 Release.	U
Heat	10100222	Uncontrolled		5.070E-4	Lb	Million Btus	Input			EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Heat	10300225	Uncontrolled		5.070E-4	Lb	Million Btus	Input			EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Heat	10100205	Uncontrolled		5.070E-4	Lb	Million Btus	Input			EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Heat	10100204	Uncontrolled		5.070E-4	Lb	Million Btus	Input			EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Heat	10100203	Uncontrolled		5.070E-4	Lb	Million Btus	Input			EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Heat	10100202	Uncontrolled		5.070E-4	Lb	Million Btus	Input			EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Heat	10100201	Uncontrolled		5.070E-4	Lb	Million Btus	Input			EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Heat	10100225	Uncontrolled		5.070E-4	Lb	Million Btus	Input			EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Heat	10100223	Uncontrolled		5.070E-4	Lb	Million Btus	Input			EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Heat	10200501	Uncontrolled		9.000E-6	Lb	Million Btus	Input			EPA. September, 1998. Section 1.3, Fuel Oil Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Heat	10200903	Multiple Cyclone W/o Fly Ash Reinjection	Electrostatic Precipitator - Medium Efficiency	2.250E-6	Lb	Million Btus	Input	F factor 9,240 dscf/MMBtu. Emission factor developed from metal to PM ratio in front-half sample.		Composite. Radian FIRE database 1993 Release.	U
Heat	10200903	Multiple Cyclone W/o Fly Ash Reinjection	Wet Scrubber - Medium Efficiency	4.000E-5	Lb	Million Btus	Input	F-factor, 9,240 dscf/MMBtu. Emission factor developed from metal to PM ratio in front-half sample.		Galston Technical Services. February 1991. In: Source Emission Testing of the Wood-fired Boiler at Catalyst Hudson, Inc., Anderson, California. Performed for the Timber Association of California.	U
Heat	10200799	Uncontrolled		6.660E-6	Lb	Million Btus	Input			Source Test Report, Landfill Boiler and Flare Systems. (Confidential Report No. ERC-3)	U
Heat	10200204	Uncontrolled		5.070E-4	Lb	Million Btus	Input			EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Heat	30600101	Uncontrolled		2.100E-6	Lb	Million Btus	Input	CARB2588 data.		Pape & Steiner Environmental Services. September 1990. In: AB-2588 Testing at Texaco Trading and Transportation Inc. Panoche Station, Volumes I, II, and III. Report PS-90-2187. Prepared for Texaco Trading and Transportation Inc.	U
Heat	10100501	Uncontrolled		9.000E-6	Lb	Million Btus	Input			EPA. September, 1998. Section 1.3, Fuel Oil Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Heat	10200201	Uncontrolled		5.070E-4	Lb	Million Btus	Input			EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Heat	10300209	Uncontrolled		5.070E-4	Lb	Million Btus	Input			EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Heat	10200203	Uncontrolled		5.070E-4	Lb	Million Btus	Input			EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Heat	10200206	Uncontrolled		5.070E-4	Lb	Million Btus	Input			EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Heat	10100224	Uncontrolled		5.070E-4	Lb	Million Btus	Input			EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Heat	10200221	Uncontrolled		5.070E-4	Lb	Million Btus	Input			EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Heat	10300207	Uncontrolled		5.070E-4	Lb	Million Btus	Input			EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Heat	10300224	Uncontrolled		5.070E-4	Lb	Million Btus	Input			EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Heat	10300206	Uncontrolled		5.070E-4	Lb	Million Btus	Input			EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Heat	10300222	Uncontrolled		5.070E-4	Lb	Million Btus	Input			EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Heat	10300203	Uncontrolled		5.070E-4	Lb	Million Btus	Input			EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Heat	10300221	Uncontrolled		5.070E-4	Lb	Million Btus	Input			EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Heat	10300205	Uncontrolled		5.070E-4	Lb	Million Btus	Input			EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Heat	10200205	Uncontrolled		5.070E-4	Lb	Million Btus	Input			EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Heat	10200222	Uncontrolled		5.070E-4	Lb	Million Btus	Input			EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Heat	10200223	Uncontrolled		5.070E-4	Lb	Million Btus	Input			EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Heat	10300501	Uncontrolled		9.000E-6	Lb	Million Btus	Input			EPA. September, 1998. Section 1.3, Fuel Oil Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Heat	10300223	Uncontrolled		5.070E-4	Lb	Million Btus	Input			EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Hot Mix Asphalt	30500258	Fabric Filter		3.300E-6	Lb	Tons	Produced			EPA. 1995. Section 11.1, Hot Mix Asphalt Plants. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Hot Mix Asphalt	30500201	Single Cyclone	Wet Scrubber - Medium Efficiency	1.030E-6	Lb	Tons	Produced	Based on 180, 190, & 170 tons/hour concrete production rate respectively during three 120-min tests.		Source Emissions Testing of a Dryer. November 13, 1991. (Confidential Report No. ERC-11)	U
Hot Mix Asphalt	30500201	Single Cyclone	Baghouse	2.000E-6	Lb	Tons	Produced			Source Emissions Testing of a Dryer. December 1991. (Confidential Report No. ERC-12)	U
Hot Mix Asphalt	30500201	Multiple Cyclone W/o Fly Ash Reinjection	Baghouse	2.080E-7	Lb	Tons	Produced			Composite. Radian FIRE database 1993 Release.	U
Hot Mix Asphalt	30500252	Fabric Filter		7.400E-7	Lb	Tons	Produced			EPA. 1995. Section 11.1, Hot Mix Asphalt Plants. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Hot Mix Asphalt	30500201	Wet Scrubber - Medium Efficiency		3.100E-6	Lb	Tons	Produced	Based on avg. of 246 tons asphalt during two 72 min. tests. 1 detection limit used.		Eureka Laboratories. January 1991. In: Compilation of Air Toxics Pollutant Emission Factors, Volume II B: Technical Support Information, Asphalt Concrete Plants, 1991 Edition, Appendix E, Plant 50. Prepared for Central Valley Rock, Sand & Gravel Association.	U
Lead	30301002	Uncontrolled		1.000E-4	Lb	Tons	Produced	Lack of Supporting Documentation.		EPA. October 1990. In: Assessment of the Controllability of Condensible Emissions. EPA-600/8-90-075. U.S. Environmental Protection Agency, Air and Energy Engineering Research Laboratory. Research Triangle Park, North Carolina.	U

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Lead	30405101	Uncontrolled		< 1.000E0	Lb	Tons	Processed			EPA. 1995. Section 12.17, Miscellaneous Lead Products. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	C
Lead	30400414	Miscellaneous Control Devices		2.400E0	Lb	Tons	Produced	Control devices are afterburner, fabric filter, venturi scrubber, and demister. Lack of Supporting Documentation.		EPA. October 1990. In: Assessment of the Controllability of Condensible Emissions. EPA-600/8-90-075. U.S. Environmental Protection Agency, Air and Energy Engineering Research Laboratory. Research Triangle Park, North Carolina.	U
Lead Oxide	30400408	Uncontrolled		4.400E-1	Lb	Tons	Produced				U
Lead in Ore	30301004	Baghouse		2.000E-3	Lb	Tons	Crushed			EPA. 1995. Section 12.6, Primary Lead Smelting. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Lead	30400414	Uncontrolled		6.000E-4	Lb	Tons	Produced			EPA. 1995. Section 12.11, Secondary Lead Processing. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Lead	30400507	Wet Scrubber - Medium Efficiency		4.000E-4	Lb	Tons	Produced	Uncontrolled emissions = 3.3E-4 lb/ton. Lack of Supporting Documentation.		EPA. October 1990. In: Assessment of the Controllability of Condensible Emissions. EPA-600/8-90-075. U.S. Environmental Protection Agency, Air and Energy Engineering Research Laboratory. Research Triangle Park, North Carolina.	U
Lead	30400413	Uncontrolled		2.000E-1 - 6.000E-1	Lb	Tons	Produced			EPA. 1995. Section 12.11, Secondary Lead Processing. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Lead	30400409	Uncontrolled		1.000E-2	Lb	Tons	Cast	Lead content of casting emissions is 36%.		EPA. 1995. Section 12.11, Secondary Lead Processing. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	C
Lead	30400413	Baghouse		1.200E-2	Lb	Tons	Produced			Pacific Environmental Services, Inc. March 15, 1994. In: Draft Final Test Report, East Penn Manufacturing Company, Secondary Lead Smelter, Volume I, Report and Appendices A & B. Research Triangle Park, North Carolina.	U
Lead	30301002	Spray Tower	Fabric Filter	1.700E-2	Lb	Tons	Produced	Lack of Supporting Documentation.		EPA. October 1990. In: Assessment of the Controllability of Condensible Emissions. EPA-600/8-90-075. U.S. Environmental Protection Agency, Air and Energy Engineering Research Laboratory. Research Triangle Park, North Carolina.	U
Lead	30405103	Uncontrolled		1.500E0	Lb	Tons	Processed			EPA. 1995. Section 12.17, Miscellaneous Lead Products. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	C
Lead	30400510	Scrubber		1.010E-1	Lb	Tons	Processed	Controlled by cascade scrubber at average efficiency of 98.3%, lead acid batteries. Lack of Supporting Documentation.		EPA. November 1979. In: Lead-acid Battery Manufacture - Background Information for Proposed Standards. EPA-450/3-79-028a. U.S. Environmental Protection Agency. Research Triangle Park, North Carolina.	U
Lead	30400425	Uncontrolled		7.000E-4	Lb	Tons	Produced			EPA. 1995. Section 12.11, Secondary Lead Processing. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Lead	30400426	Uncontrolled		1.000E-2	Lb	Tons	Produced	Lead content of kettle refining emissions is 40%.		EPA. 1995. Section 12.11, Secondary Lead Processing. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	C
Lignite	10300305	Miscellaneous Control Devices		4.200E-4	Lb	Tons	Burned	The factor applies to boilers utilizing either venturi scrubbers, spray dryer absorbers, or wet limestone scrubbers with an electrostatic precipitator (ESP) or fabric filter (FF). In addition, the factor applies to boilers using only an ESP, FF, or venturi scrubber. Emission factor equations are available in AP42 Table 1.7-12 for this pollutant for all typical firing configurations and control scenarios		EPA. September, 1998. Section 1.7, Lignite Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S.Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Lignite	10100301	Miscellaneous Control Devices		4.200E-4	Lb	Tons	Burned	The factor applies to boilers utilizing either venturi scrubbers, spray dryer absorbers, or wet limestone scrubbers with an electrostatic precipitator (ESP) or fabric filter (FF). In addition, the factor applies to boilers using only an ESP, FF, or venturi scrubber. Emission factor equations are available in AP42 Table 1.7-12 for this pollutant for all typical firing configurations and control scenarios		EPA. September, 1998. Section 1.7, Lignite Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S.Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Lignite	10100302	Miscellaneous Control Devices		4.200E-4	Lb	Tons	Burned	The factor applies to boilers utilizing either venturi scrubbers, spray dryer absorbers, or wet limestone scrubbers with an electrostatic precipitator (ESP) or fabric filter (FF). In addition, the factor applies to boilers using only an ESP, FF, or venturi scrubber. Emission factor equations are available in AP42 Table 1.7-12 for this pollutant for all typical firing configurations and control scenarios		EPA. September, 1998. Section 1.7, Lignite Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S.Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A

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Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Lignite	10200303	Miscellaneous Control Devices		4.200E-4	Lb	Tons	Burned	The factor applies to boilers utilizing either venturi scrubbers, spray dryer absorbers, or wet limestone scrubbers with an electrostatic precipitator (ESP) or fabric filter (FF). In addition, the factor applies to boilers using only an ESP, FF, or venturi scrubber. Emission factor equations are available in AP42 Table 1.7-12 for this pollutant for all typical firing configurations and control scenarios		EPA. September, 1998. Section 1.7, Lignite Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S.Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Lignite	10100303	Miscellaneous Control Devices		4.200E-4	Lb	Tons	Burned	The factor applies to boilers utilizing either venturi scrubbers, spray dryer absorbers, or wet limestone scrubbers with an electrostatic precipitator (ESP) or fabric filter (FF). In addition, the factor applies to boilers using only an ESP, FF, or venturi scrubber. Emission factor equations are available in AP42 Table 1.7-12 for this pollutant for all typical firing configurations and control scenarios		EPA. September, 1998. Section 1.7, Lignite Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S.Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Lignite	10100318	Miscellaneous Control Devices		4.200E-4	Lb	Tons	Burned	The factor applies to boilers utilizing either venturi scrubbers, spray dryer absorbers, or wet limestone scrubbers with an electrostatic precipitator (ESP) or fabric filter (FF). In addition, the factor applies to boilers using only an ESP, FF, or venturi scrubber. Emission factor equations are available in AP42 Table 1.7-12 for this pollutant for all typical firing configurations and control scenarios		EPA. September, 1998. Section 1.7, Lignite Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S.Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A

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Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Lignite	10200301	Miscellaneous Control Devices		4.200E-4	Lb	Tons	Burned	The factor applies to boilers utilizing either venturi scrubbers, spray dryer absorbers, or wet limestone scrubbers with an electrostatic precipitator (ESP) or fabric filter (FF). In addition, the factor applies to boilers using only an ESP, FF, or venturi scrubber. Emission factor equations are available in AP42 Table 1.7-12 for this pollutant for all typical firing configurations and control scenarios		EPA. September, 1998. Section 1.7, Lignite Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S.Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Lignite	10200302	Miscellaneous Control Devices		4.200E-4	Lb	Tons	Burned	The factor applies to boilers utilizing either venturi scrubbers, spray dryer absorbers, or wet limestone scrubbers with an electrostatic precipitator (ESP) or fabric filter (FF). In addition, the factor applies to boilers using only an ESP, FF, or venturi scrubber. Emission factor equations are available in AP42 Table 1.7-12 for this pollutant for all typical firing configurations and control scenarios		EPA. September, 1998. Section 1.7, Lignite Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S.Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Lignite	10300306	Miscellaneous Control Devices		4.200E-4	Lb	Tons	Burned	The factor applies to boilers utilizing either venturi scrubbers, spray dryer absorbers, or wet limestone scrubbers with an electrostatic precipitator (ESP) or fabric filter (FF). In addition, the factor applies to boilers using only an ESP, FF, or venturi scrubber. Emission factor equations are available in AP42 Table 1.7-12 for this pollutant for all typical firing configurations and control scenarios		EPA. September, 1998. Section 1.7, Lignite Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S.Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Material	30300604	Uncontrolled		3.100E-3	Lb	Tons	Produced			EPA. September 1985. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fourth Edition with Supplements A, B, and C, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	U

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Material	30300601	Uncontrolled		2.900E-1	Lb	Tons	Produced			EPA. September 1985. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fourth Edition with Supplements A, B, and C, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	U
Material	50300203	Uncontrolled		2.000E-4	Lb	Tons	Burned			EPA. 1995. Section 2.5, Open Burning. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	C
Material	30400242	Uncontrolled		5.000E0	Lb	Tons	Produced			EPA. 1995. Section 12.9, Secondary Copper Smelting and Alloying. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Material	30104204	Uncontrolled		1.200E0	Lb	Tons	Produced	Emissions are fugitive.		EPA. 1995. Section 6.12, Lead Alkyl. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Material	30400398	Baghouse		< 3.800E-5	Lb	Tons	Processed			United States Pipe and Foundry Company. August 14 - 16, 1991. In: Stack Emission Tests of the Iron Melting Cupola Dust Collector and the Ductile Treating Dust Collector. Burlington, New Jersey. (Confidential Report No. ERC-116)	U
Material	30104201	Uncontrolled		5.500E1	Lb	Tons	Produced			EPA. September 1985. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fourth Edition with Supplements A, B, and C, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	U

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Material	30103515	Uncontrolled		5.500E-1	Lb	Tons	Produced			EPA. 1995. Section 12.16, Lead Oxide and Pigment Production. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Material	30103507	Baghouse		5.000E-2	Lb	Tons	Produced			EPA. 1995. Section 12.16, Lead Oxide and Pigment Production. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Material	30300605	Uncontrolled		5.700E-3	Lb	Tons	Produced			September 1986. In: National Council on Air and Stream Improvement for the Pulp and Paper Industry (NCASI) Technical Bulletin 504. VOC emission factor averaged from data presented and applies to dryers in the wood panelboard industry. Emissions are reported as loss of carbon.	U
Material	30103506	Uncontrolled		4.400E-1	Lb	Tons	Produced			EPA. 1995. Section 12.16, Lead Oxide and Pigment Production. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Material	30300701	Uncontrolled		1.100E-1	Lb	Tons	Produced			EPA. September 1985. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fourth Edition with Supplements A, B, and C, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	U

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Material	30103507	Uncontrolled		1.400E1	Lb	Tons	Produced			EPA. 1995. Section 12.16, Lead Oxide and Pigment Production. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Material	30400526	Uncontrolled		5.900E0	Lb	Tons	Processed	Lack of Supporting Documentation.		EPA. November 1979. In: Lead-acid Battery Manufacture - Background Information for Proposed Standards. EPA-450/3-79-028a. U.S. Environmental Protection Agency. Research Triangle Park, North Carolina.	U
Material	30103510	Uncontrolled		9.000E-1	Lb	Tons	Produced			EPA. 1995. Section 12.16, Lead Oxide and Pigment Production. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Material	50300203	Uncontrolled		6.700E-4	Lb	Tons	Burned			EPA. 1995. Section 2.5, Open Burning. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	C
Material	30400523	Uncontrolled		1.720E0	Lb	Tons	Processed	Lead acid batteries. Lack of Supporting Documentation.		Letter from C. Hester, Midwest Research Institute, Cary, North Carolina, to D. Michelitsch, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina. May 5, 1989.	U
Material	30400522	Uncontrolled		1.390E-1	Lb	Tons	Processed	Lack of Supporting Documentation.		EPA. November 1979. In: Lead-acid Battery Manufacture - Background Information for Proposed Standards. EPA-450/3-79-028a. U.S. Environmental Protection Agency. Research Triangle Park, North Carolina.	U

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Material	30400243	Uncontrolled		5.000E1	Lb	Tons	Produced			EPA. 1995. Section 12.9, Secondary Copper Smelting and Alloying. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Material	36000101	Uncontrolled		2.500E-1	Lb	Tons	Melted			EPA. 1995. Section 12.17, Miscellaneous Lead Products. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	C
Material	30104301	Uncontrolled		1.000E0	Lb	Tons	Produced			EPA. September 1985. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fourth Edition with Supplements A, B, and C, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	U
Material	30103520	Uncontrolled		1.300E-1	Lb	Tons	Produced			EPA. 1995. Section 12.16, Lead Oxide and Pigment Production. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Material	30400244	Uncontrolled		1.320E1	Lb	Tons	Produced			EPA. 1995. Section 12.9, Secondary Copper Smelting and Alloying. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Material	30104202	Uncontrolled		4.000E0	Lb	Tons	Produced			EPA. September 1985. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fourth Edition with Supplements A, B, and C, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	U

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Material	30104203	Uncontrolled		1.500E2	Lb	Tons	Produced			EPA. September 1985. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fourth Edition with Supplements A, B, and C, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	U
Material	30404001	Uncontrolled		5.000E-1	Lb	Tons	Processed			EPA. 1995. Section 12.17, Miscellaneous Lead Products. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	C
Material	30503505	Wet Scrubber		4.400E-3	Lb	Tons	Processed			EPA. 1995. Section 11.31, Bonded Abrasive Products. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Material	30501306	Fabric Filter		10.000E-6	Lb	Tons	Fed			EPA. June, 1997. Section 11.14, Frit Manufacturing. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement C. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Material	30501305	Fabric Filter		10.000E-6	Lb	Tons	Fed			EPA. June, 1997. Section 11.14, Frit Manufacturing. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement C. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Material	30104201	Fabric Filter	Wet Scrubber	5.500E1	Lb	Tons	Produced			EPA. 1995. Section 6.12, Lead Alkyl. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Material	30104203	Miscellaneous Control Devices		1.500E2	Lb	Tons	Produced	Controls are incinerator and fabric filter, or wet scrubber and incinerator.		EPA. 1995. Section 6.12, Lead Alkyl. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Material	30104301	Miscellaneous Control Devices		1.000E0	Lb	Tons	Produced	Controls are an elevated flare and a liquid incinerator, while a scrubber w/toluene as medium controls the blending and tank car loading/unloading systems.		EPA. 1995. Section 6.12, Lead Alkyl. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Material	30104202	Miscellaneous Control Devices		4.000E0	Lb	Tons	Produced	Controls are incinerator and fabric filter or wet scrubber and incinerator.		EPA. 1995. Section 6.12, Lead Alkyl. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Medical Waste	50200503	Spray Dryer	Fabric Filter	1.890E-4	Lb	Tons	Burned			EPA. 1995. Section 2.3, Medical Waste Incineration. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Medical Waste	50200501	Wet Scrubber - High Efficiency		6.980E-2	Lb	Tons	Burned			EPA. 1995. Section 2.3, Medical Waste Incineration. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Medical Waste	50200501	Wet Scrubber - Low Efficiency		7.940E-2	Lb	Tons	Burned			EPA. 1995. Section 2.3, Medical Waste Incineration. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Medical Waste	50200503	Spray Dryer	Miscellaneous Control Devices	7.380E-5	Lb	Tons	Burned	Control devices used were spray dryer carbon injection, and fabric filter.		EPA. 1995. Section 2.3, Medical Waste Incineration. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Medical Waste	50200501	Dry Sorbent Injection	Baghouse	5.170E-5	Lb	Tons	Burned	Control devices are dry sorbent injection, baghouse, and scrubber.		EPA. 1995. Section 2.3, Medical Waste Incineration. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Medical Waste	50200503	Uncontrolled		1.240E-1	Lb	Tons	Burned			EPA. 1995. Section 2.3, Medical Waste Incineration. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Medical Waste	50200501	Fabric Filter		9.920E-5	Lb	Tons	Burned			EPA. 1995. Section 2.3, Medical Waste Incineration. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Medical Waste	50200501	Dry Sorbent Injection	Fabric Filter	6.250E-5	Lb	Tons	Burned			EPA. 1995. Section 2.3, Medical Waste Incineration. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Medical Waste	50200501	Wet Scrubber - Medium Efficiency	Fabric Filter	1.600E-3	Lb	Tons	Burned			EPA. 1995. Section 2.3, Medical Waste Incineration. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Medical Waste	50200501	Uncontrolled		7.280E-2	Lb	Tons	Burned			EPA. 1995. Section 2.3, Medical Waste Incineration. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Medical Waste	50200501	Dry Sorbent Injection	Carbon Injection	9.270E-5	Lb	Tons	Burned	Control devices used were dry sorbent injection, carbon injection, and fabric filter.		EPA. 1995. Section 2.3, Medical Waste Incineration. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Medical Waste	50200501	Dry Sorbent Injection	Electrostatic Precipitator	4.700E-3	Lb	Tons	Burned			EPA. 1995. Section 2.3, Medical Waste Incineration. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Metal	30400403	Uncontrolled		1.040E2	Lb	Tons	Produced			EPA. 1995. Section 12.11, Secondary Lead Processing. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	C
Metal	30400403	Miscellaneous Control Devices		2.900E-1	Lb	Tons	Produced	The controlled emission factor was estimated from tests using several control devices such as baghouse, wet scrubber, cyclone, fabric filter, settling chamber and demister.		EPA. 1995. Section 12.11, Secondary Lead Processing. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	C
Metal	30400412	Uncontrolled		4.000E-1 - 1.800E0	Lb	Tons	Charged	Assumes 23% lead content of uncontrolled blast furnace fire emissions.		EPA. 1995. Section 12.11, Secondary Lead Processing. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Metal	30400402	Uncontrolled		6.500E1	Lb	Tons	Produced			EPA. 1995. Section 12.11, Secondary Lead Processing. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	C
Metal	30400301	Baghouse		2.672E-3	Lb	Tons	Charged	Iron melting stack data exceeded the standards specified by the permit for all pollutants, except sulfur dioxide.		United States Pipe and Foundry Company. August 14 - 16, 1991. In: Stack Emission Tests of the Iron Melting Cupola Dust Collector and the Ductile Treating Dust Collector. Burlington, New Jersey. (Confidential Report No. ERC-116)	U
Metal	30400404	Uncontrolled		7.000E0 - 1.600E1	Lb	Tons	Produced	The emissions are based on the assumption that uncontrolled reverberatory furnace flue emissions are 23% lead.		EPA. 1995. Section 12.11, Secondary Lead Processing. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Natural Gas	10300601	Uncontrolled		5.000E-4	Lb	Million Cubic Feet	Burned	Hazardous Air Pollutant (HAP) as defined by Section 112(b) of the Clean Air Act. HAP because it is Polycyclic Organic Matter (POM). POM is a HAP as defined by Section 112(b) of the Clean Air Act.		EPA. March, 1998. Section 1.4, Natural Gas Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement D. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Natural Gas	10100601	Uncontrolled		5.000E-4	Lb	Million Cubic Feet	Burned	Hazardous Air Pollutant (HAP) as defined by Section 112(b) of the Clean Air Act. HAP because it is Polycyclic Organic Matter (POM). POM is a HAP as defined by Section 112(b) of the Clean Air Act.		EPA. March, 1998. Section 1.4, Natural Gas Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement D. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Natural Gas	A2104006010	Uncontrolled		5.000E-4	Lb	Million Cubic Feet	Burned	Hazardous Air Pollutant (HAP) as defined by Section 112(b) of the Clean Air Act. HAP because it is Polycyclic Organic Matter (POM). POM is a HAP as defined by Section 112(b) of the Clean Air Act.		EPA. March, 1998. Section 1.4, Natural Gas Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement D. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Natural Gas	10200601	Uncontrolled		5.000E-4	Lb	Million Cubic Feet	Burned	Hazardous Air Pollutant (HAP) as defined by Section 112(b) of the Clean Air Act. HAP because it is Polycyclic Organic Matter (POM). POM is a HAP as defined by Section 112(b) of the Clean Air Act.		EPA. March, 1998. Section 1.4, Natural Gas Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement D. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Natural Gas	10200602	Uncontrolled		5.000E-4	Lb	Million Cubic Feet	Burned	Hazardous Air Pollutant (HAP) as defined by Section 112(b) of the Clean Air Act. HAP because it is Polycyclic Organic Matter (POM). POM is a HAP as defined by Section 112(b) of the Clean Air Act.		EPA. March, 1998. Section 1.4, Natural Gas Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement D. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Natural Gas	10300602	Uncontrolled		5.000E-4	Lb	Million Cubic Feet	Burned	Hazardous Air Pollutant (HAP) as defined by Section 112(b) of the Clean Air Act. HAP because it is Polycyclic Organic Matter (POM). POM is a HAP as defined by Section 112(b) of the Clean Air Act.		EPA. March, 1998. Section 1.4, Natural Gas Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement D. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Natural Gas	10100602	Uncontrolled		5.000E-4	Lb	Million Cubic Feet	Burned	Hazardous Air Pollutant (HAP) as defined by Section 112(b) of the Clean Air Act. HAP because it is Polycyclic Organic Matter (POM). POM is a HAP as defined by Section 112(b) of the Clean Air Act.		EPA. March, 1998. Section 1.4, Natural Gas Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement D. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Natural Gas	10100604	Uncontrolled		5.000E-4	Lb	Million Cubic Feet	Burned	Hazardous Air Pollutant (HAP) as defined by Section 112(b) of the Clean Air Act. HAP because it is Polycyclic Organic Matter (POM). POM is a HAP as defined by Section 112(b) of the Clean Air Act.		EPA. March, 1998. Section 1.4, Natural Gas Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement D. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Natural Gas	10300603	Uncontrolled		5.000E-4	Lb	Million Cubic Feet	Burned	Hazardous Air Pollutant (HAP) as defined by Section 112(b) of the Clean Air Act. HAP because it is Polycyclic Organic Matter (POM). POM is a HAP as defined by Section 112(b) of the Clean Air Act.		EPA. March, 1998. Section 1.4, Natural Gas Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement D. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Ore	30303106	Uncontrolled		1.200E-2	Lb	Tons	Processed			EPA. 1995. Section 12.18, Leadbearing Ore Crushing and Grinding. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Ore	30303105	Uncontrolled		1.200E-1	Lb	Tons	Processed			EPA. 1995. Section 12.18, Leadbearing Ore Crushing and Grinding. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Ore	30301004	Uncontrolled		3.000E-1	Lb	Tons	Crushed			EPA. September 1985. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fourth Edition with Supplements A, B, and C, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	U

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Ore	30303107	Uncontrolled		1.200E-1	Lb	Tons	Processed			EPA. 1995. Section 12.18, Leadbearing Ore Crushing and Grinding. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Ore	30301032	Baghouse		2.000E-3	Lb	Tons	Processed			EPA. 1995. Section 12.6, Primary Lead Smelting. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Ore	30303104	Uncontrolled		1.200E-1	Lb	Tons	Processed			EPA. 1995. Section 12.18, Leadbearing Ore Crushing and Grinding. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Ore	30303101	Uncontrolled		3.000E-1	Lb	Tons	Processed			EPA. 1995. Section 12.18, Leadbearing Ore Crushing and Grinding. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Ore	30303102	Uncontrolled		1.200E-2	Lb	Tons	Processed			EPA. 1995. Section 12.18, Leadbearing Ore Crushing and Grinding. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Ore	30301028	Baghouse		6.000E-4	Lb	Tons	Processed			EPA. 1995. Section 12.6, Primary Lead Smelting. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Ore	30303103	Uncontrolled		1.200E-2	Lb	Tons	Processed			EPA. 1995. Section 12.18, Leadbearing Ore Crushing and Grinding. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Pellets	30302382	Multiple Cyclones	Wet Scrubber	6.800E-5	Lb	Tons	Produced			EPA. February 1997. Section 11.23, Taconite Ore Processing. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement C. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Pellets	30302352	Multiple Cyclones		5.000E-4	Lb	Tons	Produced			EPA. February 1997. Section 11.23, Taconite Ore Processing. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement C. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Pellets	30302381	Multiple Cyclones	Wet Scrubber	6.800E-5	Lb	Tons	Produced			EPA. February 1997. Section 11.23, Taconite Ore Processing. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement C. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Pellets	30302351	Multiple Cyclones		5.000E-4	Lb	Tons	Produced			EPA. February 1997. Section 11.23, Taconite Ore Processing. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement C. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Pellets	30302388	Multiple Cyclones	Wet Scrubber	7.600E-5	Lb	Tons	Produced			EPA. February 1997. Section 11.23, Taconite Ore Processing. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement C. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Pellets	30302387	Multiple Cyclones	Wet Scrubber	7.600E-5	Lb	Tons	Produced			EPA. February 1997. Section 11.23, Taconite Ore Processing. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement C. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Raw Material	30303012	Uncontrolled		1.300E-1	Lb	Tons	Processed				U
Refuse Derived Fuel	50100103	Spray Dryer	Fabric Filter	1.040E-3	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 5500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2, NOx, CO).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Refuse Derived Fuel	50100103	Spray Dryer	Electrostatic Precipitator	1.160E-3	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 5500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2, NOx, CO).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Refuse Derived Fuel	50100103	Electrostatic Precipitator		3.660E-3	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 5500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2, NOx, CO).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Refuse Derived Fuel	10201202	Uncontrolled		1.300E-1	Lb	Tons	Burned	Edited 05/19/92		EPA. September 1985. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fourth Edition with Supplements A, B, and C, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	U
Refuse Derived Fuel	10301202	Uncontrolled		1.300E-1	Lb	Tons	Burned	Edited 05/19/92		EPA. September 1985. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fourth Edition with Supplements A, B, and C, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	U
Refuse Derived Fuel	50100103	Uncontrolled		2.010E-1	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 5500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2, NOx, CO).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	C
Residual Oil (No. 5)	10100405	Uncontrolled		2.400E-3	Lb	1000 Gallons	Burned	CARB2588 data.		Hopkins, K.C. and L.A. Green, CARNOT, Tustin, California. May 1990. In: Air Toxics Emissions Testing at Morro Bay Unit 3. CR1109-2088. Prepared for Pacific Gas and Electric Company, San Francisco, California. For inclusion in Air Toxics Hot Spots Inventory Required Under AB-2588.	U
Residual Oil (No. 6)	10100404	Uncontrolled		1.510E-3	Lb	1000 Gallons	Burned			EPA. September, 1998. Section 1.3, Fuel Oil Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	C

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Residual Oil	31000402	Uncontrolled		2.240E-3	Lb	1000 Gallons	Burned	F-factor, residual oil (calculated) = 9,103 dscf/MMBtu.		CARNOT. May 1990. In: Emissions Inventory Testing at Huntington Beach Generating Station Fuel Oil Heater No. 2. Prepared for Southern California Edison Company. Rosemead, California.	U
Residual Oil (No. 6)	10100401	Uncontrolled		1.510E-3	Lb	1000 Gallons	Burned			EPA. September, 1998. Section 1.3, Fuel Oil Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	C
Sinter	30301025	Electrostatic Precipitator	Scrubber	3.200E-2	Lb	Tons	Processed	This includes fugitive emissions from sinter building.		EPA. 1995. Section 12.6, Primary Lead Smelting. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Sinter	30301029	Electrostatic Precipitator	Scrubber	1.900E-2	Lb	Tons	Produced			EPA. 1995. Section 12.6, Primary Lead Smelting. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Solid Waste	50300115	Dry Sorbent Injection	Electrostatic Precipitator	2.900E-3	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Solid Waste	50300112	Dry Sorbent Injection	Electrostatic Precipitator	2.900E-3	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Solid Waste	50100107	Dry Sorbent Injection	Electrostatic Precipitator	2.900E-3	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Solid Waste	50300113	Dry Sorbent Injection	Fabric Filter	2.970E-4	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	C
Solid Waste	50100104	Dry Sorbent Injection	Electrostatic Precipitator	2.900E-3	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Solid Waste	50100105	Dry Sorbent Injection	Electrostatic Precipitator	2.900E-3	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Solid Waste	50300115	Spray Dryer	Fabric Filter	2.610E-4	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Solid Waste	50300111	Spray Dryer	Fabric Filter	2.610E-4	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Solid Waste	50300112	Spray Dryer	Fabric Filter	2.610E-4	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Solid Waste	50300112	Dry Sorbent Injection	Fabric Filter	2.970E-4	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	C
Solid Waste	50100104	Spray Dryer	Fabric Filter	2.610E-4	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Solid Waste	50100105	Spray Dryer	Fabric Filter	2.610E-4	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Solid Waste	50100106	Spray Dryer	Fabric Filter	2.610E-4	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Solid Waste	50300111	Dry Sorbent Injection	Fabric Filter	2.970E-4	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	C
Solid Waste	50100104	Spray Dryer	Electrostatic Precipitator	9.150E-4	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Solid Waste	50300115	Spray Dryer	Electrostatic Precipitator	9.150E-4	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Solid Waste	50100106	Spray Dryer	Electrostatic Precipitator	9.150E-4	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Solid Waste	50100105	Spray Dryer	Electrostatic Precipitator	9.150E-4	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Solid Waste	50300113	Spray Dryer	Electrostatic Precipitator	9.150E-4	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Solid Waste	50100107	Spray Dryer	Electrostatic Precipitator	9.150E-4	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Solid Waste	50300111	Spray Dryer	Electrostatic Precipitator	9.150E-4	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Solid Waste	50300112	Spray Dryer	Electrostatic Precipitator	9.150E-4	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Solid Waste	50100106	Dry Sorbent Injection	Fabric Filter	2.970E-4	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	C
Solid Waste	50300115	Dry Sorbent Injection	Fabric Filter	2.970E-4	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	C
Solid Waste	50100105	Dry Sorbent Injection	Fabric Filter	2.970E-4	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	C
Solid Waste	50100104	Dry Sorbent Injection	Fabric Filter	2.970E-4	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	C
Solid Waste	50100107	Dry Sorbent Injection	Fabric Filter	2.970E-4	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	C

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Solid Waste	50100107	Spray Dryer	Fabric Filter	2.610E-4	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Solid Waste	50300113	Spray Dryer	Fabric Filter	2.610E-4	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Solid Waste	50300111	Dry Sorbent Injection	Electrostatic Precipitator	2.900E-3	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Solid Waste	50300111	Uncontrolled		2.130E-1	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Solid Waste	50300102	Uncontrolled		1.810E-3	Lb	Tons	Burned			Compliance and Toxics Testing of an Incinerator at a Ski Resort. (Confidential Report No. ERC-88)	U
Solid Waste	50100104	Electrostatic Precipitator		3.000E-3	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Solid Waste	50100101	Electrostatic Precipitator		2.820E-3	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., CO, NOx).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	C
Solid Waste	50300112	Electrostatic Precipitator		3.000E-3	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Solid Waste	50100106	Electrostatic Precipitator		3.000E-3	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Solid Waste	50300111	Electrostatic Precipitator		3.000E-3	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Solid Waste	50300114	Electrostatic Precipitator		2.820E-3	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., CO, NOx).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	C

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Solid Waste	50300113	Uncontrolled		2.130E-1	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Solid Waste	50300112	Uncontrolled		2.130E-1	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Solid Waste	50300115	Electrostatic Precipitator		3.000E-3	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Solid Waste	50100107	Electrostatic Precipitator		3.000E-3	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Solid Waste	50100101	Uncontrolled		1.200E-1	Lb	Tons	Burned			EPA. September 1985. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fourth Edition with Supplements A, B, and C, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	U
Solid Waste	50100102	Uncontrolled		1.800E-1	Lb	Tons	Burned			EPA. September 1985. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fourth Edition with Supplements A, B, and C, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	U

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Solid Waste	50300115	Uncontrolled		2.130E-1	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Solid Waste	50100104	Uncontrolled		2.130E-1	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Solid Waste	50100105	Uncontrolled		2.130E-1	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Solid Waste	50100107	Uncontrolled		2.130E-1	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Solid Waste	50100106	Uncontrolled		2.130E-1	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Solid Waste	10101201	Uncontrolled		2.650E-1	Lb	Tons	Burned			Composite. Radian FIRE database 1994 Release.	U

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Solid Waste	50300113	Dry Sorbent Injection	Electrostatic Precipitator	2.900E-3	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Solid Waste	50100105	Electrostatic Precipitator		3.000E-3	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Solid Waste	50100106	Dry Sorbent Injection	Electrostatic Precipitator	2.900E-3	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Solid Waste	10101201	Miscellaneous Control Devices		< 2.660E-4	Lb	Tons	Burned	Control devices are spray dryer, absorber, and electrostatic precipitator. Two detection limit values were used to calculate the emission factor averages.		Camden Resource Recovery Facility, Unit 1 stack emissions tests. Test date: October 18, 1991. (Confidential Report No. ERC-107)	U
Solid Waste	50300113	Electrostatic Precipitator		3.000E-3	Lb	Tons	Burned	EF calculated from F-factor of 9570 dscf/MBtu and heating value of 4500 Btu/lb. EF should be used for estimating long-term emission levels. This particularly applies to pollutants measured w/ continuous emission monitoring system (e.g., SO2).		EPA. 1995. Section 2.1, Refuse Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Sprayed Metal	30904001	Uncontrolled		5.000E-1	Lb	Tons	Consumed				U

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Steel	30900198	Baghouse		2.940E-3	Lb	Tons	Produced	Emission factors are based on the sum of the results of the front and back half sample analysis.		Determination of EPA Combined Metals and Cadmium Emissions from an ARC Furnace Baghouse. June 25, 1990. Test dates: May 30 - June 1, 1990. (Confidential Report No. ERC-60)	U
Subbituminous Coal	10300223	Uncontrolled		1.330E-2	Lb	Tons	Burned	Based on literature review.		EPA. 1995. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Subbituminous Coal	10300226	Miscellaneous Control Devices		4.200E-4	Lb	Tons	Burned	ESP or FABRIC FILTER only & WET LIMESTONE SCRUBBER or SPRAY DRYER w/ESP or FABRIC FILTER		EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Subbituminous Coal	10100226	Miscellaneous Control Devices		4.200E-4	Lb	Tons	Burned	ESP or FABRIC FILTER only & WET LIMESTONE SCRUBBER or SPRAY DRYER w/ESP or FABRIC FILTER		EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Subbituminous Coal	10200222	Miscellaneous Control Devices		4.200E-4	Lb	Tons	Burned	ESP or FABRIC FILTER only & WET LIMESTONE SCRUBBER or SPRAY DRYER w/ESP or FABRIC FILTER		EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Subbituminous Coal	10100222	Miscellaneous Control Devices		4.200E-4	Lb	Tons	Burned	ESP or FABRIC FILTER only & WET LIMESTONE SCRUBBER or SPRAY DRYER w/ESP or FABRIC FILTER		EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Subbituminous Coal	10200226	Miscellaneous Control Devices		4.200E-4	Lb	Tons	Burned	ESP or FABRIC FILTER only & WET LIMESTONE SCRUBBER or SPRAY DRYER w/ESP or FABRIC FILTER		EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Subbituminous Coal	10300223	Miscellaneous Control Devices		4.200E-4	Lb	Tons	Burned	ESP or FABRIC FILTER only & WET LIMESTONE SCRUBBER or SPRAY DRYER w/ESP or FABRIC FILTER		EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Subbituminous Coal	10100238	Miscellaneous Control Devices		4.200E-4	Lb	Tons	Burned	ESP or FABRIC FILTER only & WET LIMESTONE SCRUBBER or SPRAY DRYER w/ESP or FABRIC FILTER		EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Subbituminous Coal	10200222	Uncontrolled		1.330E-2	Lb	Tons	Burned	Based on literature review.		EPA. 1995. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Subbituminous Coal	10100225	Uncontrolled		1.330E-2	Lb	Tons	Burned	Based on literature review.		EPA. 1995. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Subbituminous Coal	10300222	Uncontrolled		1.330E-2	Lb	Tons	Burned	Based on literature review.		EPA. 1995. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Subbituminous Coal	10300222	Miscellaneous Control Devices		4.200E-4	Lb	Tons	Burned	ESP or FABRIC FILTER only & WET LIMESTONE SCRUBBER or SPRAY DRYER w/ESP or FABRIC FILTER		EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Subbituminous Coal	10200221	Uncontrolled		1.330E-2	Lb	Tons	Burned	Based on literature review.		EPA. 1995. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Subbituminous Coal	10300221	Uncontrolled		1.330E-2	Lb	Tons	Burned	Based on literature review.		EPA. 1995. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Subbituminous Coal	10100224	Uncontrolled		1.330E-2	Lb	Tons	Burned	Based on literature review.		EPA. 1995. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Subbituminous Coal	10300224	Uncontrolled		1.330E-2	Lb	Tons	Burned	Based on literature review.		EPA. 1995. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Subbituminous Coal	10300225	Uncontrolled		1.330E-2	Lb	Tons	Burned	Based on literature review.		EPA. 1995. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Subbituminous Coal	10100222	Uncontrolled		1.330E-2	Lb	Tons	Burned	Based on literature review.		EPA. 1995. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Subbituminous Coal	10200225	Uncontrolled		1.330E-2	Lb	Tons	Burned	Based on literature review.		EPA. 1995. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Subbituminous Coal	10200223	Uncontrolled		1.330E-2	Lb	Tons	Burned	Based on literature review.		EPA. 1995. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Subbituminous Coal	10200224	Uncontrolled		1.330E-2	Lb	Tons	Burned	Based on literature review.		EPA. 1995. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Subbituminous Coal	10100221	Uncontrolled		1.330E-2	Lb	Tons	Burned	Based on literature review.		EPA. 1995. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Subbituminous Coal	10100223	Uncontrolled		1.330E-2	Lb	Tons	Burned	Based on literature review.		EPA. 1995. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	E
Subbituminous Coal	10100223	Miscellaneous Control Devices		4.200E-4	Lb	Tons	Burned	ESP or FABRIC FILTER only & WET LIMESTONE SCRUBBER or SPRAY DRYER w/ESP or FABRIC FILTER		EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A
Subbituminous Coal	10200223	Miscellaneous Control Devices		4.200E-4	Lb	Tons	Burned	ESP or FABRIC FILTER only & WET LIMESTONE SCRUBBER or SPRAY DRYER w/ESP or FABRIC FILTER		EPA. September, 1998. Section 1.1, Bituminous and Subbituminous Coal Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	A

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Waste Oil	10500114	Uncontrolled		1.640E-2	Lb	1000 Gallons	Burned	Formula for this factor is 0.41L where "L"= weight% lead in fuel. Multiply numeric value by L to obtain emission factor. For example, if lead content is 5%, then L=5. std factor based on assumed 0.04 weight % lead.		EPA. October, 1996. Section 1.11, Waste Oil Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Waste Oil	10301302	Uncontrolled		2.200E0	Lb	1000 Gallons	Burned	Formula for this factor is 55L where "L"= weight% lead in fuel. Multiply numeric value by L to obtain emission factor. For example, if lead content is 5%, then L=5. std factor based on assumed 0.04 weight % lead.		EPA. October, 1996. Section 1.11, Waste Oil Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Waste Oil	10201302	Uncontrolled		2.200E0	Lb	1000 Gallons	Burned			EPA. 1995. Section 1.11, Waste Oil Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Waste Oil	10500213	Uncontrolled		2.000E0	Lb	1000 Gallons	Burned	Formula for this factor is 50L where "L"= weight% lead in fuel. Multiply numeric value by L to obtain emission factor. For example, if lead content is 5%, then L=5. std factor based on assumed 0.04 weight % lead.		EPA. October, 1996. Section 1.11, Waste Oil Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Waste Oil	10500113	Uncontrolled		2.000E0	Lb	1000 Gallons	Burned	Formula for this factor is 50L where "L"= weight% lead in fuel. Multiply numeric value by L to obtain emission factor. For example, if lead content is 5%, then L=5. std factor based on assumed 0.04 weight % lead.		EPA. October, 1996. Section 1.11, Waste Oil Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Waste Oil	10101302	Uncontrolled		2.200E0	Lb	1000 Gallons	Burned			EPA. 1995. Section 1.11, Waste Oil Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Waste Oil	10500214	Uncontrolled		1.640E-2	Lb	1000 Gallons	Burned	Formula for this factor is 0.41L where "L"= weight% lead in fuel. Multiply numeric value by L to obtain emission factor. For example, if lead content is 5%, then L=5. std factor based on assumed 0.04 weight % lead.		EPA. October, 1996. Section 1.11, Waste Oil Combustion. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Wood/Bark	10200905	Multiple Cyclone W/o Fly Ash Reinjection		3.200E-4	Lb	Tons	Burned	Emission factors are based on wet, as-fired wood waste with average properties of 50 weight percent moisture and 2,500 kcal/kg (4,500 Btu/lb) higher heating value.		EPA. 1995. Section 1.6, Wood Waste Combustion in Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Wood/Bark	10300902	Multiple Cyclone W/o Fly Ash Reinjection		3.200E-4	Lb	Tons	Burned	Units are lb of pollutant/ton of wood waste burned. Emission factors are based on wet, as-fired wood waste with average properties of 50 weight% moisture and 4500 Btu/lb higher heating value. Due to lead's relative volatility, it is assumed that flyash reinjection does not have a significant effect on lead emissions following mechanical collectors.		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Wood/Bark	10300902	Electrostatic Precipitator		1.600E-5	Lb	Tons	Burned	Emission factors are based on wet, as-fired wood waste with average properties of 50 weight percent moisture and 2,500 kcal/kg (4,500 Btu/lb) higher heating value.		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Wood/Bark	10300902	Scrubber		3.500E-4	Lb	Tons	Burned	Emission factors are based on wet, as-fired wood waste with average properties of 50 weight percent moisture and 2,500 kcal/kg (4,500 Btu/lb) higher heating value.		EPA. 1995. Section 1.6, Wood Waste Combustion in Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Wood/Bark	10200902	Electrostatic Precipitator		1.600E-5	Lb	Tons	Burned	Units are lb of pollutant/ton of wood waste burned. Emission factors are based on wet, as-fired wood waste with average properties of 50 weight% moisture and 4500 Btu/lb higher heating value.		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Wood/Bark	10200905	Electrostatic Precipitator		1.600E-5	Lb	Tons	Burned	Emission factors are based on wet, as-fired wood waste with average properties of 50 weight percent moisture and 2,500 kcal/kg (4,500 Btu/lb) higher heating value.		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Wood/Bark	10100902	Electrostatic Precipitator		1.600E-5	Lb	Tons	Burned	Units are lb of pollutant/ton of wood waste burned. Emission factors are based on wet, as-fired wood waste with average properties of 50 weight% moisture and 4500 Btu/lb higher heating value.		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Wood/Bark	10200902	Multiple Cyclone W/o Fly Ash Reinjection		3.200E-4	Lb	Tons	Burned	Emission factors are based on wet, as-fired wood waste with average properties of 50 weight percent moisture and 2,500 kcal/kg (4,500 Btu/lb) higher heating value.		EPA. 1995. Section 1.6, Wood Waste Combustion in Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Wood/Bark	10300902	Multiple Cyclone W/o Fly Ash Reinjection		3.200E-4	Lb	Tons	Burned	Emission factors are based on wet, as-fired wood waste with average properties of 50 weight percent moisture and 2,500 kcal/kg (4,500 Btu/lb) higher heating value.		EPA. 1995. Section 1.6, Wood Waste Combustion in Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Wood	10200903	Multiple Cyclone W/o Fly Ash Reinjection		3.100E-4	Lb	Tons	Burned	Emission factors are based on wet, as-fired wood waste with average properties of 50 weight percent moisture and 2,500 kcal/kg (4,500 Btu/lb) higher heating value.		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Wood/Bark	10100902	Scrubber		3.500E-4	Lb	Tons	Burned	Emission factors are based on wet, as-fired wood waste with average properties of 50 weight percent moisture and 2,500 kcal/kg (4,500 Btu/lb) higher heating value.		EPA. 1995. Section 1.6, Wood Waste Combustion in Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Wood	10200906	Miscellaneous Control Devices		4.450E-4	Lb	Tons	Burned	Units are lb of pollutant/ton of wood waste burned. Emission factors are based on wet, as-fired wood waste with average properties of 50 weight% moisture and 4500 Btu/lb higher heating value. Emission factor represents measurements from wood waste combustors equipped with PM controls (i.e., fabric filters, multi-cyclones, ESP, and wet scrubbers).		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Wood	10200903	Miscellaneous Control Devices		4.450E-4	Lb	Tons	Burned	Units are lb of pollutant/ton of wood waste burned. Emission factors are based on wet, as-fired wood waste with average properties of 50 weight% moisture and 4500 Btu/lb higher heating value. Emission factor represents measurements from wood waste combustors equipped with PM controls (i.e., fabric filters, multi-cyclones, ESP, and wet scrubbers).		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Wood	10100903	Miscellaneous Control Devices		4.450E-4	Lb	Tons	Burned	Units are lb of pollutant/ton of wood waste burned. Emission factors are based on wet, as-fired wood waste with average properties of 50 weight% moisture and 4500 Btu/lb higher heating value. Emission factor represents measurements from wood waste combustors equipped with PM controls (i.e., fabric filters, multi-cyclones, ESP, and wet scrubbers).		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Wood/Bark	10200905	Miscellaneous Control Devices		4.450E-4	Lb	Tons	Burned	Units are lb of pollutant/ton of wood waste burned. Emission factors are based on wet, as-fired wood waste with average properties of 50 weight% moisture and 4500 Btu/lb higher heating value. Emission factor represents measurements from wood waste combustors equipped with PM controls (i.e., fabric filters, multi-cyclones, ESP, and wet scrubbers).		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Wood/Bark	10300902	Miscellaneous Control Devices		4.450E-4	Lb	Tons	Burned	Units are lb of pollutant/ton of wood waste burned. Emission factors are based on wet, as-fired wood waste with average properties of 50 weight% moisture and 4500 Btu/lb higher heating value. Emission factor represents measurements from wood waste combustors equipped with PM controls (i.e., fabric filters, multi-cyclones, ESP, and wet scrubbers).		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Wood/Bark	10100902	Miscellaneous Control Devices		4.450E-4	Lb	Tons	Burned	Units are lb of pollutant/ton of wood waste burned. Emission factors are based on wet, as-fired wood waste with average properties of 50 weight% moisture and 4500 Btu/lb higher heating value. Emission factor represents measurements from wood waste combustors equipped with PM controls (i.e., fabric filters, multi-cyclones, ESP, and wet scrubbers).		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Wood/Bark	10200902	Miscellaneous Control Devices		4.450E-4	Lb	Tons	Burned	Units are lb of pollutant/ton of wood waste burned. Emission factors are based on wet, as-fired wood waste with average properties of 50 weight% moisture and 4500 Btu/lb higher heating value. Emission factor represents measurements from wood waste combustors equipped with PM controls (i.e., fabric filters, multi-cyclones, ESP, and wet scrubbers).		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Wood/Bark	10200905	Multiple Cyclone W/ Fly Ash Reinjection		3.200E-4	Lb	Tons	Burned	Emission factors are based on wet, as-fired wood waste with average properties of 50 weight percent moisture and 2,500 kcal/kg (4,500 Btu/lb) higher heating value.		EPA. 1995. Section 1.6, Wood Waste Combustion in Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Wood/Bark	10200902	Multiple Cyclone W/ Fly Ash Reinjection		3.200E-4	Lb	Tons	Burned	Units are lb of pollutant/ton of wood waste burned. Emission factors are based on wet, as-fired wood waste with average properties of 50 weight% moisture and 4500 Btu/lb higher heating value. Due to lead's relative volatility, it is assumed that flyash reinjection does not have a significant effect on lead emissions following mechanical collectors.		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Wood/Bark	10100902	Multiple Cyclone W/ Fly Ash Reinjection		3.200E-4	Lb	Tons	Burned	Emission factors are based on wet, as-fired wood waste with average properties of 50 weight percent moisture and 2,500 kcal/kg (4,500 Btu/lb) higher heating value.		EPA. 1995. Section 1.6, Wood Waste Combustion in Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Wood/Bark	10200905	Multiple Cyclone W/ Fly Ash Reinjection		3.200E-4	Lb	Tons	Burned	Units are lb of pollutant/ton of wood waste burned. Emission factors are based on wet, as-fired wood waste with average properties of 50 weight% moisture and 4500 Btu/lb higher heating value. Due to lead's relative volatility, it is assumed that flyash reinjection does not have a significant effect on lead emissions following mechanical collectors.		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Wood	10200907	Miscellaneous Control Devices		4.450E-4	Lb	Tons	Burned	Units are lb of pollutant/ton of wood waste burned. Emission factors are based on wet, as-fired wood waste with average properties of 50 weight% moisture and 4500 Btu/lb higher heating value. Emission factor represents measurements from wood waste combustors equipped with PM controls (i.e., fabric filters, multi-cyclones, ESP, and wet scrubbers).		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Wood/Bark	10100902	Multiple Cyclone W/ Fly Ash Reinjection		3.200E-4	Lb	Tons	Burned	Units are lb of pollutant/ton of wood waste burned. Emission factors are based on wet, as-fired wood waste with average properties of 50 weight% moisture and 4500 Btu/lb higher heating value. Due to lead's relative volatility, it is assumed that flyash reinjection does not have a significant effect on lead emissions following mechanical collectors.		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Wood	10300903	Miscellaneous Control Devices		4.450E-4	Lb	Tons	Burned	Units are lb of pollutant/ton of wood waste burned. Emission factors are based on wet, as-fired wood waste with average properties of 50 weight% moisture and 4500 Btu/lb higher heating value. Emission factor represents measurements from wood waste combustors equipped with PM controls (i.e., fabric filters, multi-cyclones, ESP, and wet scrubbers).		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Wood/Bark	10200905	Scrubber		3.500E-4	Lb	Tons	Burned	Emission factors are based on wet, as-fired wood waste with average properties of 50 weight percent moisture and 2,500 kcal/kg (4,500 Btu/lb) higher heating value.		EPA. 1995. Section 1.6, Wood Waste Combustion in Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Wood/Bark	10200902	Scrubber		3.500E-4	Lb	Tons	Burned	Emission factors are based on wet, as-fired wood waste with average properties of 50 weight percent moisture and 2,500 kcal/kg (4,500 Btu/lb) higher heating value.		EPA. 1995. Section 1.6, Wood Waste Combustion in Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Wood/Bark	10200902	Multiple Cyclone W/ Fly Ash Reinjection		3.200E-4	Lb	Tons	Burned	Emission factors are based on wet, as-fired wood waste with average properties of 50 weight percent moisture and 2,500 kcal/kg (4,500 Btu/lb) higher heating value.		EPA. 1995. Section 1.6, Wood Waste Combustion in Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Wood	10200903	Uncontrolled		4.450E-4	Lb	Tons	Burned	Emission factors are based on wet, as-fired wood waste with average properties of 50 weight percent moisture and 2,500 kcal/kg (4,500Btu/lb) higher heating value.		EPA. October, 1996. Section 1.6, Table 5, Wood Waste Combustion in Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement B. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Wood	10200906	Uncontrolled		4.450E-4	Lb	Tons	Burned	Emission factors are based on wet, as-fired wood waste with average properties of 50 weight percent moisture and 2,500 kcal/kg (4,500Btu/lb) higher heating value.		EPA. October, 1996. Section 1.6, Table 5, Wood Waste Combustion in Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement B. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Wood	10100903	Uncontrolled		4.450E-4	Lb	Tons	Burned	Emission factors are based on wet, as-fired wood waste with average properties of 50 weight percent moisture and 2,500 kcal/kg (4,500Btu/lb) higher heating value.		EPA. October, 1996. Section 1.6, Table 5, Wood Waste Combustion in Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement B. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Wood	10300903	Uncontrolled		4.450E-4	Lb	Tons	Burned	Emission factors are based on wet, as-fired wood waste with average properties of 50 weight percent moisture and 2,500 kcal/kg (4,500Btu/lb) higher heating value.		EPA. October, 1996. Section 1.6, Table 5, Wood Waste Combustion in Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement B. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Wood/Bark	10200902	Uncontrolled		4.450E-4	Lb	Tons	Burned	Emission factors are based on wet, as-fired wood waste with average properties of 50 weight percent moisture and 2,500 kcal/kg (4,500Btu/lb) higher heating value.		EPA. October, 1996. Section 1.6, Table 5, Wood Waste Combustion in Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement B. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Wood/Bark	10200905	Uncontrolled		4.450E-4	Lb	Tons	Burned	Emission factors are based on wet, as-fired wood waste with average properties of 50 weight percent moisture and 2,500 kcal/kg (4,500Btu/lb) higher heating value.		EPA. October, 1996. Section 1.6, Table 5, Wood Waste Combustion in Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement B. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Wood/Bark	10100902	Uncontrolled		4.450E-4	Lb	Tons	Burned	Emission factors are based on wet, as-fired wood waste with average properties of 50 weight percent moisture and 2,500 kcal/kg (4,500Btu/lb) higher heating value.		EPA. October, 1996. Section 1.6, Table 5, Wood Waste Combustion in Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement B. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B
Wood/Bark	10300902	Uncontrolled		4.450E-4	Lb	Tons	Burned	Emission factors are based on wet, as-fired wood waste with average properties of 50 weight percent moisture and 2,500 kcal/kg (4,500Btu/lb) higher heating value.		EPA. October, 1996. Section 1.6, Table 5, Wood Waste Combustion in Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement B. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	B

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Wood	10200906	Electrostatic Precipitator		1.100E-3	Lb	Tons	Burned	Emission factors are based on wet, as-fired wood waste with average properties of 50 weight percent moisture and 2,500 kcal/kg (4,500 Btu/lb) higher heating value.		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Wood	10300903	Electrostatic Precipitator		1.100E-3	Lb	Tons	Burned	Emission factors are based on wet, as-fired wood waste with average properties of 50 weight percent moisture and 2,500 kcal/kg (4,500 Btu/lb) higher heating value.		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Wood	10100903	Electrostatic Precipitator		1.100E-3	Lb	Tons	Burned	Emission factors are based on wet, as-fired wood waste with average properties of 50 weight percent moisture and 2,500 kcal/kg (4,500 Btu/lb) higher heating value.		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Wood	10200903	Electrostatic Precipitator		1.100E-3	Lb	Tons	Burned	Units are lb of pollutant/ton of wood waste burned. Emission factors are based on wet, as-fired wood waste with average properties of 50 weight% moisture and 4500 Btu/lb higher heating value.		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Wood/Bark	10300902	Multiple Cyclone W/ Fly Ash Reinjection		3.200E-4	Lb	Tons	Burned	Emission factors are based on wet, as-fired wood waste with average properties of 50 weight percent moisture and 2,500 kcal/kg (4,500 Btu/lb) higher heating value.		EPA. 1995. Section 1.6, Wood Waste Combustion in Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Wood/Bark	10300902	Multiple Cyclone W/ Fly Ash Reinjection		3.200E-4	Lb	Tons	Burned	Units are lb of pollutant/ton of wood waste burned. Emission factors are based on wet, as-fired wood waste with average properties of 50 weight% moisture and 4500 Btu/lb higher heating value. Due to lead's relative volatility, it is assumed that flyash reinjection does not have a significant effect on lead emissions following mechanical collectors.		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Wood	10200906	Multiple Cyclone W/o Fly Ash Reinjection		3.100E-4	Lb	Tons	Burned	Emission factors are based on wet, as-fired wood waste with average properties of 50 weight percent moisture and 2,500 kcal/kg (4,500 Btu/lb) higher heating value.		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Wood/Bark	10200905	Wet Scrubber		3.500E-4	Lb	Tons	Burned	Units are lb of pollutant/ton of wood waste burned. Emission factors are based on wet, as-fired wood waste with average properties of 50 weight% moisture and 4500 Btu/lb higher heating value.		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Wood/Bark	10300902	Wet Scrubber		3.500E-4	Lb	Tons	Burned	Units are lb of pollutant/ton of wood waste burned. Emission factors are based on wet, as-fired wood waste with average properties of 50 weight% moisture and 4500 Btu/lb higher heating value.		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Wood/Bark	10200902	Wet Scrubber		3.500E-4	Lb	Tons	Burned	Units are lb of pollutant/ton of wood waste burned. Emission factors are based on wet, as-fired wood waste with average properties of 50 weight% moisture and 4500 Btu/lb higher heating value.		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Wood/Bark	10100902	Wet Scrubber		3.500E-4	Lb	Tons	Burned	Units are lb of pollutant/ton of wood waste burned. Emission factors are based on wet, as-fired wood waste with average properties of 50 weight% moisture and 4500 Btu/lb higher heating value.		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Wood	10300903	Multiple Cyclone W/o Fly Ash Reinjection		3.100E-4	Lb	Tons	Burned	Emission factors are based on wet, as-fired wood waste with average properties of 50 weight percent moisture and 2,500 kcal/kg (4,500 Btu/lb) higher heating value.		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Wood	10100903	Multiple Cyclone W/o Fly Ash Reinjection		3.100E-4	Lb	Tons	Burned	Emission factors are based on wet, as-fired wood waste with average properties of 50 weight percent moisture and 2,500 kcal/kg (4,500 Btu/lb) higher heating value.		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Wood/Bark	10100902	Multiple Cyclone W/o Fly Ash Reinjection		3.200E-4	Lb	Tons	Burned	Emission factors are based on wet, as-fired wood waste with average properties of 50 weight percent moisture and 2,500 kcal/kg (4,500 Btu/lb) higher heating value.		EPA. 1995. Section 1.6, Wood Waste Combustion in Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Wood/Bark	10100902	Multiple Cyclone W/o Fly Ash Reinjection		3.200E-4	Lb	Tons	Burned	Units are lb of pollutant/ton of wood waste burned. Emission factors are based on wet, as-fired wood waste with average properties of 50 weight% moisture and 4500 Btu/lb higher heating value. Due to lead's relative volatility, it is assumed that flyash reinjection does not have a significant effect on lead emissions following mechanical collectors.		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D

Table C-1 (Continued)

Lead Emission Factors Compiled from Version 6.23 of the Factor Information Retrieval (FIRE) Data System

Material	Source Classification Code (SCC)	Primary Control	Secondary Control	Emission Factor	Unit	Measure	Action	Notes	Formula	Reference	Quality
Wood/Bark	10200902	Multiple Cyclone W/o Fly Ash Reinjection		3.200E-4	Lb	Tons	Burned	Units are lb of pollutant/ton of wood waste burned. Emission factors are based on wet, as-fired wood waste with average properties of 50 weight% moisture and 4500 Btu/lb higher heating value. Due to lead's relative volatility, it is assumed that flyash reinjection does not have a significant effect on lead emissions following mechanical collectors.		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D
Wood/Bark	10200905	Multiple Cyclone W/o Fly Ash Reinjection		3.200E-4	Lb	Tons	Burned	Units are lb of pollutant/ton of wood waste burned. Emission factors are based on wet, as-fired wood waste with average properties of 50 weight% moisture and 4500 Btu/lb higher heating value. Due to lead's relative volatility, it is assumed that flyash reinjection does not have a significant effect on lead emissions following mechanical collectors.		EPA. February, 1999. Section 1.6, Wood Waste Combustion In Boilers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42, Supplement E. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.	D

Table C-2

California Air Resources Board's (CARB) California Air Toxic Emission Factors for Lead

Source Classification Code (SCC)	System Type	Material Type	Air Pollution Control Device	Other Description	Maximum Emission Factor	Mean Emission Factor	Median Emission Factor	Units
N/A	Abrasive Blasting	Dust	None	None	4.97E+01	5.75E+02	5.75E+02	mg/kg
30500211	Asphalt Production	Diesel/Aggregate	C/FF	None	2.77E-06	2.17E-06	2.17E-06	lbs/ton
30500205	Asphalt Production	Diesel/Aggregate	FF	None	4.04E-06	1.45E-06	1.45E-06	lbs/ton
30500205	Asphalt Production	Diesel/Aggregate	WS	None	2.19E-03	2.19E-03	2.19E-03	lbs/ton
N/A	Asphalt Production	Dust	None	None	1.40E+01	1.40E+01	1.40E+01	mg/kg
N/A	Asphalt Production	Rock plant mine feed	None	None	1.40E+01	1.40E+01	1.40E+01	mg/kg
N/A	Asphalt Production	Specialty mine feed	None	None	1.40E+01	1.40E+01	1.40E+01	mg/kg
30500211	Asphalt Production	Natural gas/Aggregate	C/FF	None	2.10E-05	1.52E-06	1.52E-06	lbs/ton
30500211	Asphalt Production	Natural gas/Aggregate	C/WS	None	2.10E-05	1.52E-06	1.52E-06	lbs/ton
30500211	Asphalt Production	Back-up oil/Aggregate	C/BH	None	7.41E-06	2.11E-06	2.11E-06	lbs/ton
30500211	Asphalt Production	Process oil 70/Aggregate	C/WS	None	7.41E-06	2.11E-06	2.11E-06	lbs/ton
30400522	Battery Production	Grids	None	None	7.98E-03	6.46E-03	6.46E-03	lbs/ton

Table C-2 (Continued)

California Air Resources Board's (CARB) California Air Toxic Emission Factors for Lead

Source Classification Code (SCC)	System Type	Material Type	Air Pollution Control Device	Other Description	Maximum Emission Factor	Mean Emission Factor	Median Emission Factor	Units
30400505	Battery Production	Batteries	None	None	1.77E-02	4.77E-03	4.77E-03	lbs/MBat
30400505	Battery Production	Batteries	None	None	2.39E-02	8.43E-03	8.43E-03	lbs/MBat
10100222	Boiler	Coal/Natural gas	None	None	3.14E-04	2.70E-04	2.70E-04	lbs/ton
10200802	Boiler	Coke/Coal	LI/AI/B	None	4.41E-06	4.32E-06	4.32E-06	lbs/ton
10100401	Boiler	No. 6 Fuel oil	None	None	3.79E-03	1.04E-03	1.04E-03	lbs/Mgal
10200401	Boiler	No. 6 Fuel oil	None	None	3.62E-02	6.41E-04	6.41E-04	lbs/Mgal
10200402	Boiler	No. 6 Fuel oil	None	None	3.62E-02	6.41E-04	6.41E-04	lbs/Mgal
10200403	Boiler	No. 6 Fuel oil	None	None	3.62E-02	6.41E-04	6.41E-04	lbs/Mgal
10200401	Boiler	Residual oil	None	None	3.62E-02	6.41E-04	6.41E-04	lbs/Mgal
10300811	Boiler	Landfill gas	None	None	6.85E-03	5.71E-03	5.71E-03	lbs/MMcf
10200701	Boiler	Refinery gas	None	EA<100%	2.49E-03	2.42E-03	2.42E-03	lbs/MMcf
10200701	Boiler	Refinery gas	SCR	EA<100%	2.49E-03	2.42E-03	2.42E-03	lbs/MMcf
10200701	Boiler	Refinery gas	None	EA>100%	7.73E-03	7.51E-04	7.51E-04	lbs/MMcf
30500606	Cement Kiln	Coal/Raw materials	FF	None	3.06E-04	1.96E-05	1.96E-05	lbs/ton
30500606	Cement Kiln	Coal/Coke/Raw materials	FF	None	2.34E-06	8.91E-07	8.91E-07	lbs/ton
30601401	Coke Calcining	Natural gas/Coke	SD/FF	None	9.27E-05	4.92E-05	4.92E-05	lbs/ton
N/A	Composition	Crude oil	None	None	2.97E+02	2.97E+02	2.97E+02	ug/l
N/A	Composition	Diesel	None	None	2.58E+02	4.17E+02	4.17E+02	ug/l
N/A	Composition	Jp-4	None	None	1.64E+03	1.64E+03	1.64E+03	ug/l

Table C-2 (Continued)

California Air Resources Board's (CARB) California Air Toxic Emission Factors for Lead

Source Classification Code (SCC)	System Type	Material Type	Air Pollution Control Device	Other Description	Maximum Emission Factor	Mean Emission Factor	Median Emission Factor	Units
N/A	Composition	Jp-5	None	None	2.05E+02	2.05E+02	2.05E+02	ug/l
N/A	Composition	Lube oil	None	None	1.98E+02	2.97E+02	2.97E+02	ug/l
31502101	Crematory	Propane/Bodies	None	None	6.29E-05	6.27E-05	6.27E-05	lbs/body
50100506	Dehydrator	Natural gas/Sludge	C	None	4.93E-07	4.93E-07	4.93E-07	lbs/ton
30400101	Delaquering	Aluminum	None	None	2.25E-02	2.12E-02	2.12E-02	lbs/ton
30902501	Drum Burning Furnace	Drums	AB	None	4.98E-04	3.98E-04	3.98E-04	lbs/drum
30502201	Dryer	Potash	S	None	6.76E-05	6.62E-05	6.62E-05	lbs/ton
30502201	Dryer	Sulfate of potash	BH	None	1.86E-03	1.71E-03	1.71E-03	lbs/ton
10100903	Fluidized Bed Combustor	Agricultural waste	AI/C/FF	None	6.77E-05	6.71E-05	6.71E-05	lbs/ton
10100903	Fluidized Bed Combustor	Agricultural/Urban wood waste	LI/SNCR/C/FF	None	1.32E-04	1.28E-04	1.28E-04	lbs/ton
10100903	Fluidized Bed Combustor	Urban wood waste	LI/SNCR/C/FF	None	5.99E-05	5.94E-05	5.94E-05	lbs/ton
10100217	Fluidized Bed Combustor	Coal	LI/AI/C/FF	None	2.11E-04	3.30E-05	3.30E-05	lbs/ton
10100217	Fluidized Bed Combustor	Coal	LI/AI/FF/ESP	None	2.11E-04	3.30E-05	3.30E-05	lbs/ton
10100801	Fluidized Bed Combustor	Coke	LI/AI/C/FF	None	4.12E-04	8.49E-05	8.49E-05	lbs/ton
30600201	Fluid Catalytic Cracking Unit	Refinery gas/Oils	ESP/COB	None	5.76E-04	3.43E-04	3.43E-04	lbs/MBar

Table C-2 (Continued)

California Air Resources Board's (CARB) California Air Toxic Emission Factors for Lead

Source Classification Code (SCC)	System Type	Material Type	Air Pollution Control Device	Other Description	Maximum Emission Factor	Mean Emission Factor	Median Emission Factor	Units
N/A	Fugitives	Casing gas/Natural gas	None	None	1.10E-03	2.00E-03	2.00E-03	ppbv
30300926	Furnace	Alloy stock	None	Electric Induction	8.64E-03	8.55E-03	8.55E-03	lbs/ton
30400107	Furnace	Aluminum	FF	Dross	5.28E-04	4.16E-04	4.16E-04	lbs/ton
30400199	Furnace	Aluminum	None	Melting Pot	1.60E-06	1.20E-06	1.20E-06	lbs/ton
30400103	Furnace	Aluminum	FF	Reverberatory	3.87E-04	3.36E-04	3.36E-04	lbs/ton
30400103	Furnace	Aluminum	None	Reverberatory	1.87E-03	2.98E-04	2.98E-04	lbs/ton
30400224	Furnace	Brass/Bronze ingot	FF	Electric Induction	1.32E-03	1.02E-03	1.02E-03	lbs/ton
30501402	Furnace	Raw materials	None	None	5.21E-04	5.13E-04	5.13E-04	lbs/ton
30501403	Furnace	Raw materials	None	None	5.21E-04	5.13E-04	5.13E-04	lbs/ton
30400401	Furnace	Lead	FF	Melting Pot	4.57E-03	2.77E-03	2.77E-03	lbs/ton
30400401	Furnace	Lead	FF	Melting Pot	4.57E-03	2.77E-03	2.77E-03	lbs/ton
30400408	Furnace	Lead	FF	Melting Pot	2.05E-03	1.16E-03	1.16E-03	lbs/ton
30400408	Furnace	Lead	FF	Melting Pot	2.05E-03	1.16E-03	1.16E-03	lbs/ton
N/A	Gas Processing	Fuel gas	None	None	2.36E-01	3.56E+00	3.56E+00	ppbv
31000403	Heater	Pipeline oil	None	None	5.48E-04	1.79E-04	1.79E-04	lbs/Mgal
30600106	Heater	Refinery gas	DeNOx	EA<100%	8.43E-03	1.50E-03	1.50E-03	lbs/MMcf
30600106	Heater	Refinery gas	DeNOx	EA<100%	8.43E-03	1.50E-03	1.50E-03	lbs/MMcf
30600106	Heater	Refinery gas	None	EA<100%	8.43E-03	1.50E-03	1.50E-03	lbs/MMcf

Table C-2 (Continued)

California Air Resources Board's (CARB) California Air Toxic Emission Factors for Lead

Source Classification Code (SCC)	System Type	Material Type	Air Pollution Control Device	Other Description	Maximum Emission Factor	Mean Emission Factor	Median Emission Factor	Units
30600106	Heater	Refinery gas	None	EA<100%	8.43E-03	1.50E-03	1.50E-03	lbs/MMcf
30600106	Heater	Refinery gas	SCR	EA<100%	8.43E-03	1.50E-03	1.50E-03	lbs/MMcf
30600106	Heater	Refinery gas	SCR	EA<100%	8.43E-03	1.50E-03	1.50E-03	lbs/MMcf
30600106	Heater	Refinery gas	None	EA>100%	9.28E-04	9.19E-04	9.19E-04	lbs/MMcf
30600106	Heater	Refinery gas	None	EA>100%	9.28E-04	9.19E-04	9.19E-04	lbs/MMcf
30600106	Heater	Refinery gas	SCR	EA>100%	9.28E-04	9.19E-04	9.19E-04	lbs/MMcf
30600106	Heater	Refinery gas	SCR	EA>100%	9.28E-04	9.19E-04	9.19E-04	lbs/MMcf
50300205	Incinerator	Diesel/Waste explosives	None	None	2.47E-02	7.42E-03	7.42E-03	lbs/ton
31307001	Oven	Coatings of electric motor winding wires	None	None	1.78E-02	1.51E-02	1.51E-02	lbs/ton
30901006	Plating	Chromic acid	PBS	None	1.53E+02	1.29E+02	1.29E+02	mg/amp-h
30501622	Preheater Kiln	Coal/Raw materials	C/FF	None	5.89E-05	3.92E-05	3.92E-05	lbs/ton
31000413	Steam Generator	Crude oil	None	None	4.90E-04	2.60E-04	2.60E-04	lbs/Mgal
31000413	Steam Generator	Crude oil	SO2 Scrub	None	4.90E-04	2.60E-04	2.60E-04	lbs/Mgal
30400101	Shredding and Delaquering	Aluminum	BH	None	4.97E-05	3.19E-05	3.19E-05	lbs/ton
30400108	Shredding and Delaquering	Aluminum	BH	None	4.97E-05	3.19E-05	3.19E-05	lbs/ton
N/A	Tank	Produced water	None	None	7.00E-04	7.00E-04	7.00E-04	ppbv
20200103	Turbine	No. 2 Distillate oil	None	None	7.18E-04	7.04E-04	7.04E-04	lbs/Mgal
20200203	Turbine	Natural gas/Refinery gas	COC/SCR	None	1.90E-03	1.81E-03	1.81E-03	lbs/MMcf
20200705	Turbine	Natural gas/Refinery gas	COC/SCR	None	1.90E-03	1.81E-03	1.81E-03	lbs/MMcf

Table C-2 (Continued)

California Air Resources Board's (CARB) California Air Toxic Emission Factors for Lead

Source Classification Code (SCC)	System Type	Material Type	Air Pollution Control Device	Other Description	Maximum Emission Factor	Mean Emission Factor	Median Emission Factor	Units
20200203	Turbine	Natural gas/Refinery gas	SCR/AI/COC	None	1.90E-03	1.81E-03	1.81E-03	lbs/MMcf
20200705	Turbine	Natural gas/Refinery gas	SCR/AI/COC	None	1.90E-03	1.81E-03	1.81E-03	lbs/MMcf
20200203	Turbine	Natural/Refinery/Liquid petroleum gas	COC/SCR	None	7.16E-02	6.85E-02	6.85E-02	lbs/MMcf
20200705	Turbine	Natural/Refinery/Liquid petroleum gas	COC/SCR	None	7.16E-02	6.85E-02	6.85E-02	lbs/MMcf
20201013	Turbine	Natural/Refinery/Liquid petroleum gas	COC/SCR	None	7.16E-02	6.85E-02	6.85E-02	lbs/MMcf
20200701	Turbine	Refinery gas	COC	None	4.18E-02	4.15E-02	4.15E-02	lbs/MMcf